

VASCULAR PLANTS OF THE RIVERINE PLAIN OF NEW SOUTH WALES WITH NOTES ON DISTRIBUTION AND PASTORAL USE

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ABSTRACT

Leigh, J.H. (CSIRO Division of Plant Industry, Canberra, Australia) and Mulham, W.E. (CSIRO Division of Land Resources Management, Deniliquin, Australia) 1977. *Vascular plants of the Riverine Plain of New South Wales with notes on distribution and forage value*. *Telopea* 1 (4): 225–291 (1977).—An enumeration of plants collected on the Riverine Plain is presented. The list includes plants collected by the authors in this semi-arid region of southern New South Wales over a fifteen-year period together with specimens lodged by other collectors at the National Herbarium of New South Wales, Sydney. Identification of the plants was carried out by taxonomists at the latter herbarium and voucher specimens are held either at this herbarium or at the CSIRO Riverina Laboratory, Deniliquin. Notes on the occurrence and forage value of each plant are included as well as a short description of the Riverine Plain and its vegetation.

INTRODUCTION

In 1965 an illustrated manual dealing with 270 of the more common grasses, forbs and small shrubs found on the Riverine Plain was published (Leigh and Mulham 1965). During the collection of material for that book and since that time, we have continued to collect specimens and make notes on species collected. Sources of reference to species we have not collected include relevant files of the New South Wales Department of Agriculture and the Soil Conservation Service of New South Wales, and publications of the National Herbarium of New South Wales, Sydney. Species are included in this list only where a specimen, identified by staff of the latter herbarium, is held either at the CSIRO Riverina Laboratory, Deniliquin, or at the National Herbarium of New South Wales. In this list specimens held at the Riverina Laboratory are followed by the abbreviation Den.; those held only at the National Herbarium are followed by NSW.

The abbreviations indicate the existence of a specimen which could, if required, be used to check the plant's specific name. It does not necessarily indicate that this is the only specimen held.

We do not claim this list to be exhaustive, nor do we claim to have included *all* specimens collected from the Riverine Plain and retained at the National Herbarium.

PREVIOUS BOTANICAL COLLECTIONS

Previous lists of plants collected on the Riverine Plain have been compiled only in as much as they have represented part of broad ecological surveys in which the Plain, or a portion of it, has been included.

Turner (1904) listed plants which he (and others) collected in south-western New South Wales, the area covered stretching from Albury almost to the South Australian border, and from the Murray River to just north of Ivanhoe. No information on distribution of individual species was included.

Beadle (1948) carried out a vegetation survey which covered all that portion of New South Wales west of an approximate line between Tocumwal on the Murray River to Mungindi on the Queensland border. Distribution of pasture species was listed in terms of presence within a number of vegetation associations. (In his unpublished D.Sc. thesis, Beadle also listed the occurrence of species on a county basis).

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Moore's survey (1953*a*, 1953*b*) of the south-eastern Riverina included portion of the south-eastern section of the Riverine Plain. Descriptive lists of species in relatively small study areas have been published by Williams (1955) and by Warren Wilson and Leigh (1964).

Although no published information is available, special mention should be made of the specimens collected by Miss E. Officer of "Zara", Wanganella, soon after the turn of the century. The National Herbarium of New South Wales has retained a great number of these specimens and, since many of the species are now either very rare or possibly extinct on the Riverine Plain, they form a valuable record.

ACKNOWLEDGEMENTS

In the compilation of this list over the last decade the authors have become indebted to a number of people for assistance in many diverse ways. We are grateful to Dr L.A.S. Johnson, Director of the National Herbarium of New South Wales, for permission to use the facilities at the Herbarium on several occasions, and to his staff, who have been extremely co-operative and helpful in the botanical determinations of specimens, the checking of nomenclature and the preparation of this list for publication. Acknowledgement is made of the assistance given by the staff of the Herbarium Australiense, Canberra, in checking specimens expected to be held there. To various officers of the New South Wales Department of Agriculture and the Soil Conservation Service of New South Wales we tender our thanks for their permission to peruse their files. Our thanks are also due to colleagues and other interested persons for the occasional specimen of previously uncollected plants and for their drawing attention to errors and omissions. Mr O.B. Williams, now of the Division of Land Resources Management, Canberra, formerly of the Division of Plant Industry, initiated the collection of plants at the Riverina Laboratory.

ARRANGEMENT

Families have been arranged in the order adopted by the National Herbarium of New South Wales in the "Flora of New South Wales" with the exception of the Pteridophyta which we have placed before the Gymnospermae. For convenience, genera and species have been listed in alphabetical order within their families.

Introduced species (marked with an asterisk) have been included only where these have become naturalized, i.e. are able to persist in the *natural* environment either as perennials, or, in the case of annuals, by regeneration from seed.

Information regarding palatability, poisonous characteristics etc. has been included where known. The use of the term "palatable" is an indication that a plant is eaten by domestic stock in the normal grazing situation.

THE RIVERINE PLAIN

The Riverine Plain of south-eastern Australia is a depositional landform developed from prior streams and ancestral rivers which were functional during quite different conditions of climate and hydrology from those which prevail at the present time. The geomorphology and hydrology of the Plain, which extends over an appreciable area of Victoria and New South Wales (68,000 sq km)—see Figure 1, has been described by Butler 1950; Pels 1964; Stannard 1968; and Leigh and Noble 1972. In brief, it is an alluvial plain of gently sloping fans which issue from three major river valleys in the eastern highlands. The gradient of the Plain decreases from about 1 in 3,000 near the hills to less than 1 in 5,000 at the western limit.

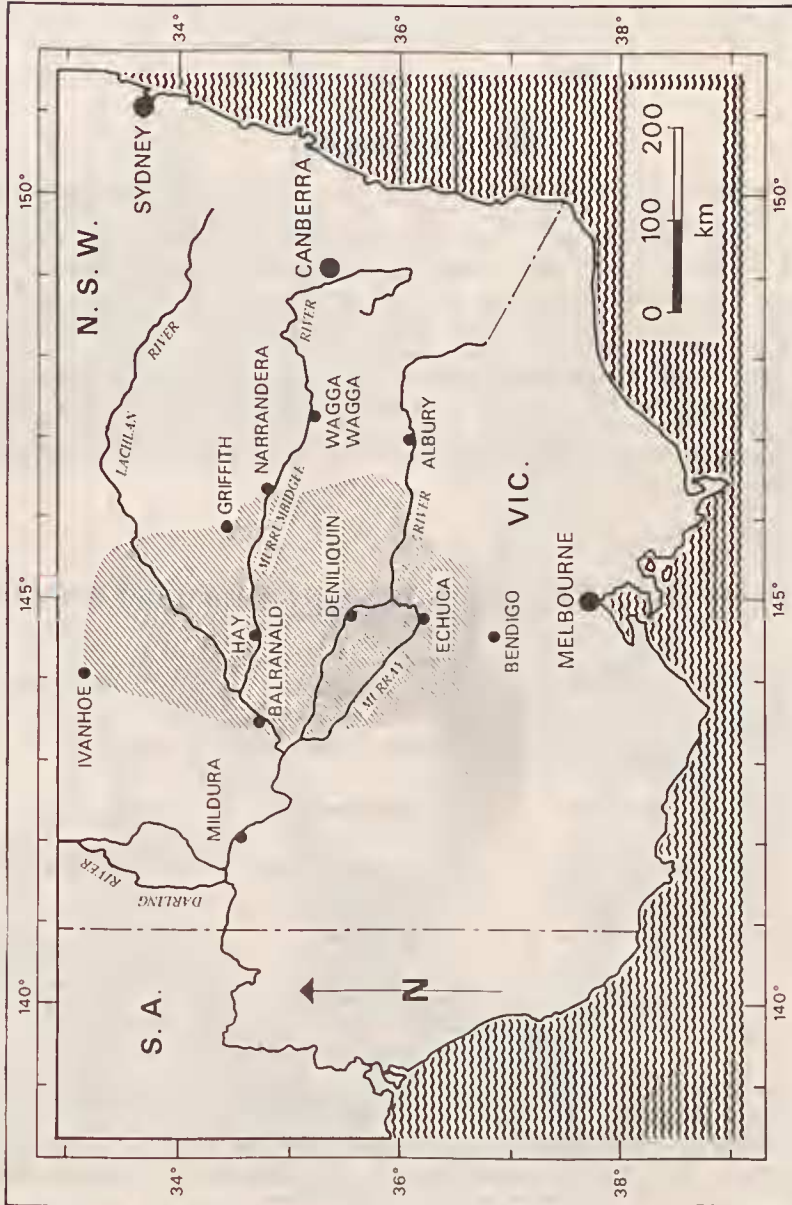


Figure 1.—The Riverine Plain of south-eastern Australia. [From Leigh and Noble (1972) after Butler (1950)]. Plants included in this checklist were collected only from that portion of the Plain north of the Murray River.

THE AREA

The area covered by this list extends over that part of the Riverine Plain north of the Murray River. It is the part of the Plain with which the authors have become familiar during the course of their activities in semi-arid research based at Deniliquin, New South Wales.

To the west, north and north-east the boundary of this area is delineated by the abrupt and conspicuous change from the flat, relatively treeless plains to the more elevated lighter soils of the mallee and belah-rosewood vegetation. In the south-east, where there is no such obvious demarcation, the boundary is the road from Barooga through Berrigan and Jerilderie to Narrandera.

THE VEGETATION

The vegetation of the Riverine Plain of New South Wales has been described by a number of authorities (Beadle 1948; Moore 1953*a*, 1953*b*; Williams 1955, 1956, 1961, 1966, 1968*a*, 1968*b*; Stannard 1963; Warren Wilson and Leigh 1964; Leigh and Noble 1972). Three formations (sclerophyll forest; woodland; shrub steppe) are recognized, comprising six subformations and alliances and eleven associations. The groupings of these climax vegetational communities are listed in Table 1 and the distribution of the alliances is depicted in Figure 2. In broad terms the vegetational formations progress in bands parallel to the isohyets from dry sclerophyll forest at the foothill section (annual rainfall 450 mm) through savannah woodland (350–450 mm) to shrub steppe (290–350 mm). Eucalypt forest and eucalypt woodland communities border the permanent water courses, drainage lines and low-lying areas.

TABLE 1. GROUPING OF CLIMAX VEGETATION COMMUNITIES WITHIN THE RIVERINE PLAIN

FORMATION	SUBFORMATION	ALLIANCE	ASSOCIATION
Sclerophyll forest	Closed Swamp, Sclerophyll Forest and Savannah Woodland	<i>Eucalyptus camaldulensis</i>	<i>E. camaldulensis</i>
Woodland	Tall Woodland	<i>Eucalyptus microcarpa</i>	<i>E. microcarpa</i> <i>E. microcarpa</i> — <i>Callitris columellaris</i> <i>E. microcarpa</i> — <i>C. columellaris</i>
	Shrub Woodland	<i>Acacia pendula</i> — <i>Atriplex nummularia</i>	<i>A. pendula</i> — <i>A. nummularia</i>
	Savannah Woodland	<i>Eucalyptus largiflarens</i>	<i>E. largiflarens</i>
Shrub Steppe	Saltbush Steppe	<i>Atriplex vesicaria</i>	<i>A. vesicaria</i> <i>A. vesicaria</i> — <i>Maireana aphylla</i> <i>A. nummularia</i>
	Bluebush Steppe	<i>Maireana pyramidata</i>	<i>Muehlenbeckia cunninghamii</i> <i>Maireana pyramidata</i>

In some parts, particularly in the northern and western districts, outliers of mallee eucalypt shrubland (*Eucalyptus* spp.) and belah-rosewood shrub woodland (*Casuarina cristata*—*Heterodendrum oleifolium*) protrude into the Riverine Plain proper. Species from these communities are not included in this list since the communities are regarded as being atypical for the Plain.

The following is a brief account of the three formations and constituent alliances and associations referred to above as they occur within the Riverine Plain of New South Wales. More detail is given in Leigh and Noble (1972).

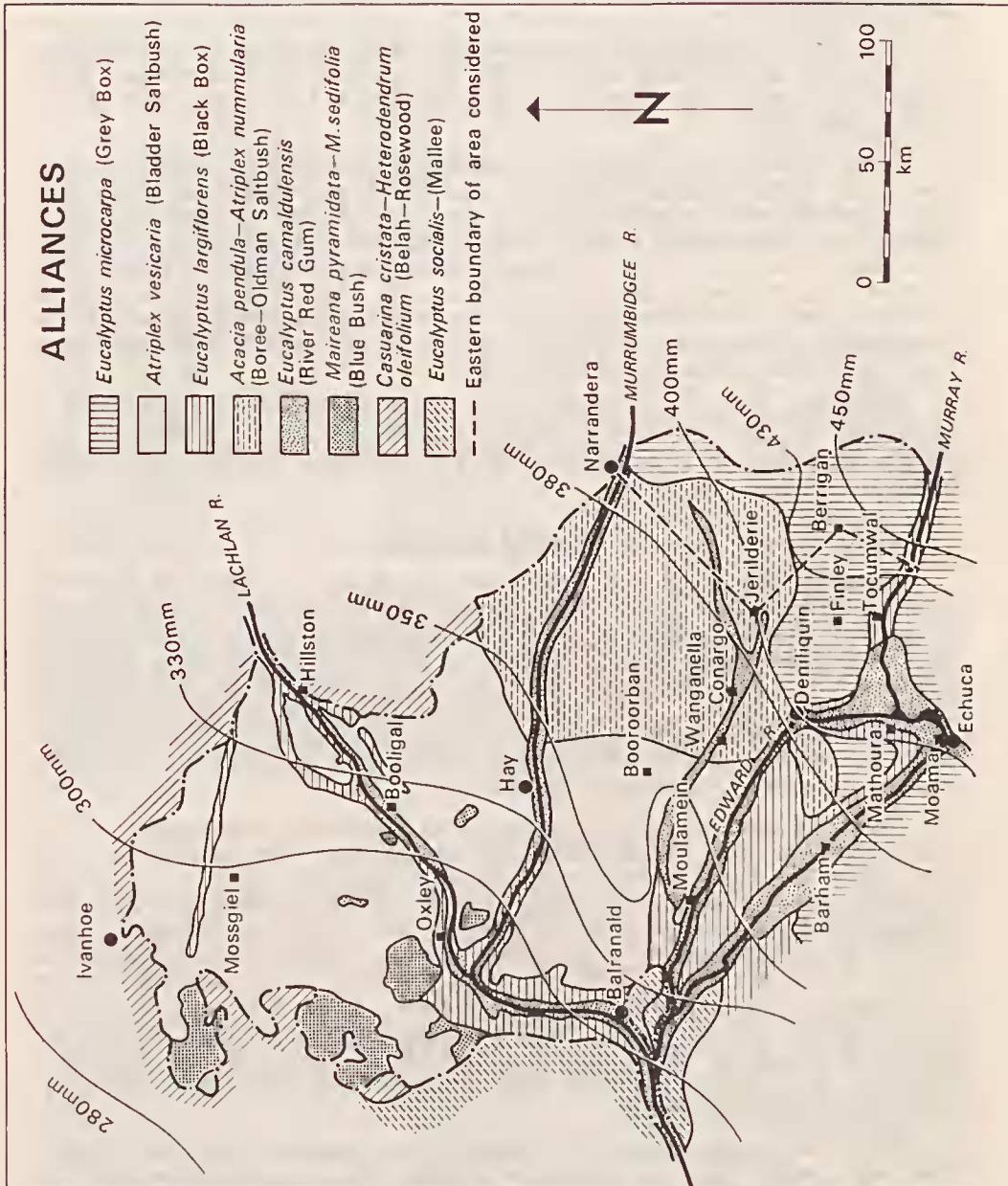


Figure 2.—The distribution of the principal vegetation alliances on the Riverine Plain (rainfall isohyets shown in millimetres). (After Leigh and Noble 1972).

(a) Sclerophyll forest formation (River Red Gum forest)

The *Eucalyptus camaldulensis* (River Red Gum) alliance occurs within this formation, although *E. camaldulensis* also occurs as a savannah woodland, the structure being determined principally by soil moisture status. This alliance is restricted in locality to the Murray River and its principal tributaries. It generally occurs as unispecific stands of trees up to 55 m in height in the better watered areas. In the drier and usually higher habitats the proportion of *Eucalyptus largiflorens* (Black Box) increases.

Beneath the trees there are grasses, sedges, rushes and other herbs which grow luxuriantly in good seasons and following the recession of flood waters. Many aquatic and semi-aquatic plants occur in permanent and semi-permanent, still or slow-moving waters.

Most of the area occupied by *E. camaldulensis* forest is administered by the New South Wales Forestry Commission. All large trees with millable timber have been felled and unfortunately no stands of trees in their original condition remain. Parts of the forest areas are grazed, mainly by cattle, for certain periods on an agistment basis. The construction of various weirs has enabled flooding to be controlled to some degree and some management has been possible. No evidence is available as to the extent to which these grazing and water management practices have altered the diversity of the species, productivity and overall composition of the understorey flora, but it is believed to have been slight.

Whilst the authors have made frequent visits into the forest areas south of Deniliquin, this area is difficult to cover thoroughly. Similarly, much of the low-lying country along the Murrumbidgee and Lachlan Rivers warrants closer examination.

(b) Woodland formation

Three subformations occur under this classification, namely tall woodland (*Eucalyptus microcarpa* (Grey Box) alliance), shrub woodland (*Acacia pendula* (Boree)—*Atriplex nummularia* (Oldman Saltbush) alliance) and savannah woodland (*E. camaldulensis* (River Red Gum) and *E. largiflorens* (Black Box) alliances). Mention has already been made of the *E. camaldulensis* alliances and they need not be discussed further. At the present time only small areas of the other original climax communities remain and these are usually in a degenerate form. The trees have been cleared to provide farming land, timber and/or drought feed. The edible shrubs have mostly long since been grazed out.

The most widespread subformation is tall woodland represented by the *E. microcarpa* (Grey Box) alliance and its three associations. The classification of the Grey Boxes has been somewhat confused, particularly in relation to *Eucalyptus woollsiana* and *E. microcarpa*. Moore (1953a, 1953b) classified the Grey Box woodlands of the Riverine Plain as being of the *E. woollsiana* alliance. More recently the specific epithet of *microcarpa* has been applied to the predominant species of Grey Box on the Plain. Although *E. microcarpa* was regarded by Pryor and Johnson (1971) as a subspecies of *E. woollsiana*, L.A.S. Johnson (pers. comm.) now concludes that the name "*woollsiana*" applies to populations intermediate between *E. pillagaensis* and *E. microcarpa*, and does not favour its use. In the area concerned in the present paper the taxon occurring is *E. microcarpa* according to Johnson's present arrangement.

The *E. microcarpa* association occurred on the medium- and heavy-textured soils, this species being the sole tree dominant. The original understorey was probably well-developed and dominated by the grasses *Themeda australis*, *Poa labillardieri* and *Stipa aristiglumis* (Moore 1953b). However, these grasses are now almost totally absent and the understorey is dominated by *Danthonia* spp., *Stipa variabilis* and *Maireana pentagona*. Many naturalized annuals may be found

growing in the cooler months. In moist summers *Chloris truncata* and *Sporobolus caroli* are common. The well-drained sites on medium- to light-textured soils were originally occupied by the *Eucalyptus melliodora* (Yellow Box)-*Callitris columnellaris* (White Cypress Pine) association, whilst on lighter soils the *E. microcarpa*-*C. columnellaris* association occurred. It is believed that in both of these associations the original herbaceous stratum was poorly developed and dominated by *Themeda australis*, *Poa labillardieri*, *Stipa aristiglumis* and *Enneapogon nigricans* (Moore 1953b). However, under normal conditions at the present time neither *T. australis* nor *P. labillardieri* are found but *S. aristiglumis* may still be found in lightly grazed or protected situations. Present-day dominants are *Danthonia* spp. and *S. variabilis*. In the cooler months the understorey cover is usually dominated by annuals.

As mentioned above, only a very small proportion of the area remains in near-pristine climax condition. Large areas have at times been cropped, fertilized and resown to improved pastures. Many useful species, as well as many weeds, have become naturalized as a result of these practices. The area, which is relatively densely settled and easily accessible, has been well-covered from a botanical viewpoint by Moore (1953a, 1953b) as well as the present authors, although new plants (particularly weedy species) occasionally come to light.

The *Acacia pendula*-*Atriplex nummularia* alliance is the second most widespread of the woodland alliances but today no stands remain with their original structure. From observations of a few isolated areas remaining it has been assumed (Moore 1953a) that the community was an open woodland with trees up to 9 m high and a well-developed but probably discontinuous shrub stratum. On the red-brown soils *Acacia pendula* was the dominant species with a shrub stratum of *Atriplex nummularia*, while on the grey and brown clays the dominant species was *Atriplex nummularia* with scattered *Acacia pendula*. Other associated shrubs included *Rhagodia spinescens*, *Enchylaena tomentosa* and *Maireana aphylla*. The herbaceous stratum was probably not well-developed. Naturalized species, particularly annuals, are now common.

The *Eucalyptus largiflorens* alliance occupies a relatively small total area, confined to low-lying areas of heavy grey soil with poor drainage and subject to infrequent flooding. This alliance is a typical savannah with an open canopy allowing the development of a continuous cover of herbaceous plants, although in some locations a dense shrub stratum of *Atriplex nummularia* occurred. The botanical changes which have followed clearing and/or grazing, are somewhat similar to those described for the *E. microcarpa* alliance. The *E. largiflorens* alliance has probably been well-examined botanically.

(c) Shrub steppe formation

The shrub steppe formation includes all treeless areas dominated by low-growing perennial bushes. This formation includes two subformations: the saltbush steppe, represented by the *Atriplex vesicaria* (Bladder Saltbush) alliance, and the bluebush steppe represented by the *Maireana pyramidata* (Black Bluebush) alliance.

The *A. vesicaria* alliance is the most widespread of those found on the Riverine Plain. Within this alliance are four associations (see Table 1) of which the *A. vesicaria* association is the most common and widespread. Within the *A. vesicaria* association the *A. vesicaria*-*Maireana aphylla* (Cotton Bush) association occurs in slightly depressed areas on very heavy soils. *A. vesicaria* and *M. aphylla* generally grow as individual plants or as three or four plants together to a height and diameter of 40–60 cm, although ungrazed plants may reach a diameter of 1.5 m. The bushes form an open community, the clumps being separated by distances equal to, or greater than, the diameter of the bushes. In some areas the soil between the bushes remains almost bare throughout the year, even under good seasonal conditions, whereas in others it supports numerous species of annual, and to a lesser degree,

perennial grasses and herbs. In northern and western districts the succulent herb *Disphyma clavellatum* (Pig-face) is often a prominent constituent, and may become the dominant ground flora species.

An extensive proportion of this alliance remains in a superficially near-pristine condition. The major change has been the great increase in naturalized herbaceous species, particularly species of the genus *Medicago*. There are no areas yet to be colonized by naturalized species. Over the remainder of the area formerly occupied by this alliance major vegetation changes have occurred as a result of grazing, *Atriplex vesicaria* in particular being susceptible to overgrazing. With a reduction in *A. vesicaria* and *Maireana aphylla* there has been a marked increase in annual and perennial grasses and herbs as well as unpalatable weed shrubs, notably *Bassia* spp. and *Nitraria billardieri* (Dillon or Nitre Bush).

The remaining two associations within this alliance occur over relatively small areas. The *Atriplex nummularia* association is confined to the better watered drainage lines and is considered as an extension of the *Acacia pendula*-*Atriplex nummularia* alliance. Individual bushes are usually one to two metres high but may reach a height of three metres.

The *Muehlenbeckia cunninghamii* (Lignum) association is confined to permanent or semi-permanent swamps, usually in association with *Eragrostis australasica* (Cane Grass).

Much of our experimental work has been carried out over a number of years in various associations within the *Atriplex vesicaria* alliance. Because of the accessibility of the area and the open structure of the vegetation, individual plants are relatively easily seen and this alliance has probably been well-explored. However, it is worth mentioning that we have been amazed by the wealth of species which occurs in years of exceptionally high rainfall. In years of moderate to low rainfall these species have not appeared and it must be concluded that they have seeds characterized by long viability.

The second subformation within this formation is the bluebush steppe. This is represented by the *Maireana pyramidata* alliance, which includes the *M. pyramidata* association. On the Riverine Plain this association is found only in small areas on red-brown sandy soils in which limestone nodules occur at a depth of one to two metres below the surface. The bushes rarely exceed one to two metres in height and in undamaged areas are separated by distances equal to or slightly less than the diameter of the bushes. Between the bushes herbaceous plants, including perennial grasses, may be abundant in favourable seasons. Naturalized herbaceous species are common. In most areas where *M. pyramidata* is growing, there has been extensive damage to the bushes and to the ground flora, soil erosion being common. This alliance covers only small areas, and has been thoroughly examined.

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PTERIDOPHYTA**DENNSTAEDTIACEAE***Pteridium* Gled. ex Scop.

- P. esculentum* (Forst. f.) Cockayne: "Austral Bracken". Only known occurrence on bank of Murray River, east of Mathoura. Apparently not eaten there, elsewhere reported to cause internal cancers in livestock. Den.

MARSILEACEAE*Marsilea* L.

- M. angustifolia* R. Br.: "Narrow-leaved Nardoo". Widespread but uncommon, occurring on edges of swamps and in low-lying areas subject to occasional inundation. Den.
- M. drummondii* A. Br.: "Nardoo". Very common throughout in damp situations. Eaten at times, suspected of being poisonous to stock. Den.

AZOLLACEAE*Azolla* Lam.

- A. filiculoides* Lam. var. *rubra* (R. Br.) Strasburger: "Red Azolla". Common and widespread on surface of still waters such as swamps, backwaters and lagoons. Den.

GYMNOSPERMAE**CUPRESSACEAE***Callitris* Vent.

- C. columellaris* F. Muell. inland form: "White Cypress Pine". Den.
- C. preissii* Miq. ssp. *murrayensis* J. Garden: "Murray Cypress Pine". Den.

Intermediate forms between these two species are found in the southern part of the area and further west, and there appears to have been considerable hybridization in intermediate habitats. In general, *C. preissii* ssp. *murrayensis* is found in the Murray River country on old sandhills whereas *C. columellaris* (inland form) is the common species in the Narrandera area and away from the river country. (L. Johnson, pers. comm.). These species originally occurred in dense stands which have been reduced because of utilization of timber for building and fencing and because of clearing for cropping.

ANGIOSPERMAE**MONOCOTYLEDONEAE****TYPHACEAE***Typha* L.

- T. orientalis* Presl: "Cumbungi". Infests extensive areas of creek and river country, also prevalent in shallow waterways, tanks, drains, and swamps. In the early stages of growth it is eaten to some extent by cattle. Den.
- T. domingensis* Pers.: "Cumbungi". Similar distribution and habitats to those of *T. orientalis*. NSW.

POTAMOGETONACEAE

Potamogeton L.

P. ochreatus Raoul: Collected at Jerilderie, 1951, probably overlooked elsewhere. NSW.

P. tricarinatus F. Muell. et A. Benn.: "Floating Pondweed". Common and widespread, growing partly submerged in swamps and streams. Den.

JUNCAGINACEAE

Triglochin L.

T. procera R. Br.: "Water Ribbons". Common in swamps, dams and backwaters of streams throughout the area. Den.

T. calcitrapa Hook.: Only known occurrence in an *Atriplex vesicaria* pasture near Wanganella, but may have been overlooked in other areas because of its small size. Den.

T. turrifera Ewart: Collected at "Zara", Wanganella, 1917. NSW.

ALISMATACEAE

Danthonium Juss.

D. minus (R. Br.) Buchen.: "Starfruit". Fairly common in swamps and along the margins of backwaters. Den.

HYDROCHARITACEAE

Elodea Michx.

* *E. canadensis* Michx.: "Elodea". A widespread aquatic weed, common in streams and irrigation channels. Den.

Ottelia Pers.

O. ovalifolia (R. Br.) L.C. Rich.: "Swamp Lily". Common in streams, backwaters and swamps. Den.

POACEAE (= GRAMINEAE)

Agropyron Gaertn.

A. scabrum (R. Br.) Beauv.: "Common Wheat Grass". Fairly widespread though relatively uncommon, occurring mainly on river flats and extending into lightly grazed pastures. Useful forage when young. Den.

Agrostis L.

A. avenacea Gmel.: "Blown Grass". Very common in moist situations throughout the area. Grazed when young, unpalatable when mature. Den. The similar *A. aenula* R. Br. may also occur in the area but no specimen was seen except "*A. avenacea* verging towards *aenula*", from Jerilderie district, 1880. NSW.

Aira L.

* *A. cupaniana* Guss.: "Silvery Hair Grass". Common in southern and eastern districts. Of no economic importance. Den.

Alopecurus L.

- * *A. geniculatus* L.: "Marsh Foxtail". In depressions and moist situations throughout the area; very common. Grazed when young. Den.

Amphibromus Nees

- A. neesii* Steud.: "Swamp Wallaby Grass". Common in moist situations; widespread. Useful cattle forage. Den.

Aristida L.

- A. armata* Henr.: Fairly common in forest areas bordering Murray River. Den.
A. behriana F. Muell.: "Brush Wire Grass". Widespread throughout, usually on soils of light texture. Of some forage value, though awned seeds can be troublesome to stock. Den.
A. jerichoensis Domin var. *subspinulifera* Henr.: Occurs on sandhills, mainly in southern and eastern districts. Uncommon. Den.

Avena L.

- * *A. fatua* L.: "Wild Oat". Very common and widespread. Grazed readily in early stages of growth. Den.

Bothriochloa Kuntze

- B. macra* (Steud.) S.T. Blake: "Red-leg Grass". Widespread in southern districts, usually occurring in localized patches in slight depressions in open woodlands and grasslands. Not highly regarded but grazed to some degree in its early stages. Den.

Briza L.

- * *B. minor* L.: "Shivery Grass". Not widely distributed but common in some southern and eastern districts. Of little forage value. Den.

Bromus L.

- * *B. alopecuroides* Poir.: "Curly Brome". Fairly common in localized areas on light soils. Of little economic importance. Den.
B. arenarius Labill.: "Sand Brome". Common, particularly on light soils. Of some forage value before maturity. Den.
* *B. diandrus* Roth: "Great Brome". Of limited occurrence on light soils; a weed with troublesome awned seeds. Den.
* *B. molliformis* Lloyd: "Soft Brome". Widespread and fairly common, particularly on light soils; of some value as forage but only when young. Den.
* *B. mollis* L.: "Soft Brome". Widespread and very common; utilized when young but becomes unpalatable with maturity. Den.
* *B. rubens* L.: "Red Brome". Widespread and very common on all soils; provides some forage in its early stage of growth but becomes rank and unpalatable. Den.
* *B. unioloides* Kunth: "Prairie Grass". A widespread and common weed; occasionally a useful forage plant but rarely of economic importance. Den.

Cenchrus L.

- * *C. incertus* M.A. Curtis: Collected from near Barham. NSW.
* *C. longispinus* (Hack.) Fern.: "Spiny Burr Grass". A weed restricted to localized areas on sandy soils: the burrs are particularly spiny and troublesome. Den.

Chloris Swartz

- C. acienlaris* Lindl.: "Curly Windmill Grass". Widespread and common on a wide range of soils. A valuable perennial grass which responds well to summer rain. Den.
- * *C. gayana* Kunth: "Rhodes Grass". Used in irrigated pastures and occasionally spontaneous in moist situations. A useful species. Den.
- C. truncata* R. Br.: "Windmill Grass". Widespread and very common on all soils; a valuable summer growing grass. Den.

Cymbopogon Spreng.

- C. obteetus* S.T. Blake: "Silky-heads". A rare species; only known occurrence in Tocumwal cemetery. Den.

Cynodon L.C. Rich.

- * *C. dactylon* (L.) Pers.: "Couch". Widespread and very common in moist situations on all types of soils; provides useful forage in summer. Den.

Daetyloctenium Willd.

- D. radulans* (R. Br.) Beauv.: "Button Grass". Widespread and fairly common, usually on light soils. Short-lived, grazed at most stages of growth. Den.

Danthonia DC.

- D. caespitosa* Gaudich.: "White-top" or "Ringed Wallaby Grass". Widespread; dominant pasture species in grasslands and open woodlands on clay soils in southern and eastern districts, co-dominant with *Stipa variabilis* on clay loam soils, less frequent in saltbush plains and forest areas. A valuable palatable perennial grass which will withstand heavy grazing. Intergrades between this species and *D. setacea* are also common and widespread. Den.
- D. duttoniana* A.B. Cashmore: "Brown-backed Wallaby Grass". Fairly common in moist situations, particularly in southern districts; a rather coarse species of limited forage value. Den.
- D. setacea* R. Br.: "Small-flowered Wallaby Grass". Common, particularly in southern districts; a useful forage species. Intergrades of this species and *D. caespitosa* are common. Den.

Deyenxia Clar. ex Beauv.

- D. quadriseta* (Labill.) Benth.: "Reed Bent Grass". Known only from forest area south of Deniliquin, where locally common. Den.

Diehelachne Endl.

- D. sciurea* (R. Br.) Hook. f.: "Short-haired Plume Grass". Tocumwal cemetery is only known occurrence. Den.

Digitaria Haller

- D. amnophila* (Benth.) Hughes: "Silky Umbrella Grass". Widespread but of somewhat sparse occurrence; usually grows on light soils. Drought-resistant, grazed at times. Den.
- D. brownii* (Roem. et Schult.) Hughes: "Cotton Grass". Recorded from Hay, 1913. NSW.

- D. coenicola* (F. Muell.) Hughes: "Finger Panic Grass". Uncommon, usually restricted to light soils; grazed but of unknown forage value. Den.
- D. divaricatissima* (R. Br.) Hughes: "Umbrella Grass". Widespread on light soils but rather uncommon; grazed only in occasional years. Den.
- * *D. sanguinalis* (L.) Scop.: "Summer Grass". Widespread and common weed of gardens and irrigation areas. Den.

Diplachne Beauv.

- D. fusca* (L.) Beauv.: "Brown Beetle Grass". Common in depressions on heavy soils, in roadside drains, swamps and lagoons; moderately palatable and considered good cattle feed. Den.

Echinochloa Beauv.

- * *E. colonum* (L.) Link: Den.
- * *E. crusgalli* (L.) Beauv.: Den.
- * *E. microstachya* (Wieg.) Rydb.: Den.
- * *E. oryzoides* (Ard.) Fritsch: Den.

"Barnyard Grasses". Widespread and troublesome summer weeds of crops (particularly rice) and gardens—rare in natural pastures. Palatable, but in most situations in which they occur they are not desirable plants.

Ehrharta Thunb.

- * *E. calycina* Sm.: "Perennial Veldt Grass". Uncommon; confined to localized areas on sandy soils. Den.
- * *E. longiflora* Sm.: "Annual Veldt Grass". Rare; occasional occurrences on river flats. Den.

Emmeapogon Desv. ex Beauv.

- E. avenaceus* (Lindl.) C.E. Hubbard: "Bottle-washers". Recorded from Mossgiel and "Zara", Wanganella. Possibly widespread but not collected elsewhere because of its similarity to *E. nigricans*. Readily grazed. NSW.
- E. nigricans* (R. Br.) Beauv.: "Nigger-heads". Widespread and common on sandy soils. Readily grazed. Den.
- E. polyphyllus* (Domin) N.T. Burbidge: Recorded from Jerilderie, 1880. NSW.

Eragrostis Beauv.

- E. australasica* (Steud.) C.E. Hubbard: "Cane Grass". Widespread and common in low-lying areas. A coarse species which is rarely grazed. Den.
- E. brownii* (Kunth) Nees ex Steud.: "Brown's Love Grass". Uncommon; rarely occurring in sufficient quantity to be considered useful. Den.
- * *E. ciliaris* (All.) Link ex Lut.: "Stink Grass". Very common and widespread on light soils; a summer weed of fallows and irrigated pastures. Grazed only when young. Den.
- * *E. curvula* (Schrader) Nees: "African Love Grass". Uncommon except in localized areas on sand-hills in southern districts. Unpalatable, although it may be grazed by hungry stock. Den.

- E. dielsii* Pilger: "Mallee Love Grass". Generally uncommon except on sandy soils in western areas. A relatively palatable summer-growing forage plant. Den.
- E. elongata* (Willd.) J.F. Jacq.: "Clustered Love Grass". Widespread on sandy soils, generally uncommon. Palatable. Den.
- E. eriopoda* Benth.: "Woollybutt Grass". Uncommon, occurring in northern and western areas, mainly on light soils. Palatable. Den.
- E. lacunaria* F. Muell. ex Benth.: "Purple Love Grass". Widespread, though rather uncommon, generally found on light soils. Palatable. Den.
- E. parviflora* (R. Br.) Trin.: "Weeping Love Grass". Widespread and common, usually in moist situations; a weed in irrigation areas. Fairly palatable. Den.
- * *E. poaeoides* Beauv.: "Smaller Stink Grass". Only known occurrence on loam soil between Deniliquin and Conargo. Den.
- E. setifolia* Nees: "Neverfail Grass". Widespread and fairly common, particularly in northern districts. A highly regarded palatable species. Den.

Eriochloa Kunth

- E. crebra* S.T. Blake: Common on clay soil in western districts. Possibly occurs elsewhere but it may be overlooked because of its similarity to *E. pseudoacrotricha*. Den.
- E. pseudoacrotricha* (Stapf ex Thell.) J.M. Black: "Early Spring Grass". Widespread and common in moist situations. A readily-eaten summer species. Den.

Eulalia Kunth

- E. fulva* (R. Br.) Kuntze: "Silky Browntop". Widespread but of somewhat sparse occurrence; usually found in moist situations on loam soils. Very palatable. Den.

Glyceria R. Br.

- * *G. uaxina* (Hartm.) Holmb.: "Water Meadow Grass". Collected from Colligen Creek, near Stevens Weir; only known occurrence. Den.

Holcus L.

- * *H. lanatus* L.: "Yorkshire Fog". A weed of irrigated pastures and surrounds. Den.

Hordeum L.

- * *H. leporinum* Link: "Barley Grass". Widespread and very common, particularly on light soils. Grazed readily when young, shunned when mature and dry. Den.
- * *H. marinum* Huds.: "Sea Barley Grass". Widespread, common in damp or saline situations. Grazed only when young. Den.

Iseilema Anderss.

- I. meubraunaceum* (Lindl.) Domin: "Flinders Grass". Collected near Wanganella, also recorded in the Hay district, but never common. Den.

Koeleria Pers.

- **K. phleoides* (Vill.) Pers.: "Annual Catstail". Widespread but of sparse occurrence. Palatable. Den.

Lamarckia Moench

- L. aurea* (L.) Moench: "Golden-top". Widespread and common on light soils. Palatable. Den.

Leptochloa Beauv.

- L. digitata* (R. Br.) Domin: "Umbrella Cane Grass". Appears to be widespread although rare, usually occurring in low-lying areas. Den.

Lolium L.

- **L. perenne* L.: "Perennial Ryegrass". Used extensively in irrigated pastures and lawns from where it has occasionally spread into moist situations. Den.
- **L. rigidum* Gaudin: "Wimmera Ryegrass". A common constituent of irrigated pastures and spontaneous in many dryland areas. Very palatable winter-spring forage. Den.

Oryzopsis Michx.

- **O. miliacea* (L.) Aschers et Schweinf.: "Rice Millet". Rare; occasionally found in the vicinity of old homesteads and settlements. Den.

Panicum L.

- P. decompositum* R. Br.: "Native Millet". Widely distributed and fairly common in moist situations. Palatable. Den.
- P. effusum* R. Br.: "Hairy Panic". Widespread; fairly common in moist situations. Fairly palatable although suspected of poisoning sheep. Den.
- P. prolutum* F. Muell.: "Rigid Panic". Widespread and relatively common. Palatable. Den.
- P. whitei* J.M. Black: "Pepper Grass". Widespread but of rather sparse occurrence; usually found in drainage lines and depressions. Palatable, especially when young. Den.

Parapholis Hubbard

- **P. incurva* (L.) Hubbard: "Curly Ryegrass". Widespread and common on clay soils; tolerant of damp and saline conditions. Palatable. Den.

Paspalidium Stapf

- P. constrictum* (Domin) Hubbard: Widely distributed but of somewhat sparse occurrence. Palatable. Previous local references to this plant have been as *P. gracile* (R. Br.) Hughes. NSW.
- P. jubiflorum* (Trin.) Hughes: "Warrego Summer Grass". Common on river banks and river flats on a wide variety of soils. Palatable. Den.

Paspalum L.

- **P. dilatatum* Poir: "Paspalum". Widely used in irrigation pastures from where it has spread into moist situations. Den.

P. paspalodes (Michx.) Scribn. (= *Paspalum distichum* L.): "Water Couch". Widespread and common in shallow water of streams and swamps. Palatable. Den.

Pennisetum L.C. Rich. ex Pers.

**P. villosum* R. Br.: "Long-Styled Feather Grass". Roadside species around Deniliquin and other areas of habitation. Den.

Pentaschistis Stapf

**P. airoides* (Nees) Stapf: "False Hair Grass". Observed only near Narrandera, where common on loam soil. Den.

Phalaris L.

**P. aquatica* L.: "Phalaris". Used extensively in irrigated pastures, from where it has spread into adjacent moist situations. Den.

**P. minor* Retz.: "Lesser Canary Grass". Fairly widespread but common only in localized areas. Moderately palatable when young. Den.

**P. paradoxa* L.: "Paradoxa Grass". Widely distributed and very common in localized areas on heavy soils. Palatable when young. Den.

Phragmites Adans.

P. australis (Cav.) Trin. ex Steud.: "Common Reed". Widespread and common, bordering streams throughout the area. Den.

Poa L.

**P. annua* L.: "Annual Poa". "Winter Grass". Very common weed in areas of habitation. Den.

**P. bulbosa* L.: "Bulbous Poa". Only known occurrence near Narrandera where it was common on loam soil. Den.

P. fordeana F. Muell.: "Sweet Swamp Grass". Widespread, common in localized areas, particularly in the Booligal district. Den.

P. labillardieri Steud.: "Tussock Grass". Common but restricted to areas bordering permanent streams and subject to periodic flooding. Palatable only when young. Den.

**P. pratensis* L.: "Kentucky Blue Grass". River flat, Deniliquin. Probably spread from garden rubbish as it is not found in natural pasture elsewhere in area. Den.

P. sieberana Spreng.: "Tussock Grass". Only known occurrence on sandy soil in forest area near Mathoura. Den.

Polypogon Desf.

**P. monspeliensis* (L.) Desf.: "Annual Beard Grass". Widely distributed and common in damp, often saline situations. Apparently unpalatable. Den.

Pseudoraphis W. Griffith

P. spinescens (R. Br.) J. Vickery: "Spiny Mud Grass". Widespread and fairly common; growing in mud and shallow water in streams and swamps. Den.

Puccinellia Parl.

- P. stricta* (Hook. f.) C. Blom: "Marsh Grass". Recorded for flooded clay plains near Moulamein and from near Oxley. Den.

Sclisnius Beauv.

- **S. barbatus* (L.) Thell.: "Arabian Grass". Widespread and common, mainly on sandy soils. Moderately palatable. Den.

Setaria Beauv.

- **S. verticillata* (L.) Beauv.: "Whorled Pigeon Grass", "Rough Bristle Grass". Widespread; common in moist cultivated areas and gardens. Palatable, but regarded as a weed. Den.

Sporobolus R. Br.

- S. caroli* Mez: "Fairy Grass". Widespread and common in a wide variety of habitats. Very palatable; a valuable summer forage plant. Den.
- S. mitchellii* (Trin.) Hubbard ex S.T. Blake: "Rat's-tail Couch". Widespread; common in localized areas along water-courses. Den.

Stipa L.

- S. aristiglumis* F. Muell.: "Plains Grass". Widespread and fairly common in a wide range of habitats. Moderately palatable. Den.
- S. blackii* Hubbard: One collection, from near Berrigan. NSW.
- S. drummondii* Steud.: Identification uncertain. Recorded from Millewa Forest, near Mathoura. Den.
- S. elegantissima* Labill.: "Feather Spear Grass". Widespread but of sparse occurrence, usually growing in protected situations. Presumably very palatable. Den.
- S. nitida* Summerhayes et Hubbard: Recorded from Jerilderie in 1880. Possibly included under *S. variabilis* in more recent years. NSW.
- S. platychaeta* Hughes: One record, from Hay, 1885. NSW.
- S. variabilis* Hughes: "Variable Spear Grass". Widespread and very common, particularly on light soils. A useful forage species, although seeds are troublesome to stock, penetrating the eyes, feet and skins of young animals, sometimes to the point of causing death. The value of meat and hides containing large quantities of seeds is decreased. Den.

Themeda Forsk.

- T. australis* (R. Br.) Stapf.: "Kangaroo Grass". Widespread; originally common, now confined to localized protected areas. Very palatable. Den.

Tragus Haller

- T. australianus* S.T. Blake: "Small Burr Grass". Widespread and locally common on light soils. Palatable but short-lived. Den.

Tripogon Roem. et Schult.

- T. loliiformis* (F. Muell.) Hubbard: "Five-minute Grass". Widespread and fairly common on light soils. Palatable. Den.

Triraphis R. Br.

T. mollis R. Br.: "Needle Grass". Uncommon; from "Zara", Wanganella (1913) and more recently from "Willurah" between Conargo and Hay. Den.

Trisetum Pers.

**T. pumilum* (Desf.) Kunth: "Tiny Bristle Grass". Common on loam soil on western boundary of Riverine Plain; not collected elsewhere. Den.

Vulpia K.C. Gmel.

**V. myuros* (L.) K.C. Gmel.: "Rat's-tail Fescue". Widespread and common on all soils. Fairly palatable in the early growth stage, ignored when mature. Den.

CYPERACEAE

Carex L.

C. appressa R. Br.: "Tall Sedge". Widespread on stream banks, swamps and damp places. Den.

C. inversa R. Br. inland form: "Knob Sedge". Widespread and common in moist situations. Fairly palatable. Den.

Cyperus L.

C. bifax C.B. Clarke: "Downs Nut-grass". One collection from shallow water at "Ulonga", near One Tree, 40 km north of Hay. Den.

C. concinnus R. Br.: Recorded from swamp at "Ulonga", near One Tree. Distribution unknown. Den.

C. difformis L.: "Dirty Dora". Common in swamps and in rice-growing areas. Den.

**C. eragrostis* Lam.: "Umbrella Sedge". Widespread; a common weed of river banks, channels, drains, etc. Den.

C. exaltatus Retz.: Widespread and common on water's-edge along rivers and creeks. Den.

C. gymnocaulos Steud.: Widespread; common near water, usually on sandy soil. Den.

C. pygmaeus Rottb. Collected near Lachlan River at Oxley. NSW.

C. victoriensis Clarke: Recorded from river-flat near Deniliquin. Widespread in similar situations. Den.

Eleocharis R. Br.

E. acuta R. Br.: "Common Spike Rush". Widespread; common in low-lying areas and along the margins of rivers etc. Unpalatable. Den.

E. pallens (Benth.) S.T. Blake: "Pale Spike Rush". Widespread; common in low-lying areas and along the margins of rivers etc. Unpalatable. Den.

E. pusilla R. Br.: "Small Spike Rush". Widespread and common on flat areas along the margins of streams and swamps. Den.

Fiinbristylis Vahl

F. dichotoma (L.) Vahl: "Common Fringe-rush". Collected from near Jerilderie. Den.

F. velata R. Br. One collection from near Moama. NSW.

Lipocarpa R. Br.

L. microcephala (R. Br.) Kunth: One record from Stevens Weir; distribution unknown. Den.

Scirpus L.

S. inuidatus (R. Br.) Poir.: Widespread and common in moist situations. Den.

S. victorieusis Wakefield: Widespread, occurring in damp, low-lying situations near streams in southern districts. Den.

LEMNACEAE

Spirodela Schleid.

S. pusilla (Hegelm.) Hegelm.: a "Duckweed".

Material from the area has been identified under this name but the taxonomy of the group requires further study and it is also possible that other species of *Spirodela* or *Lemna* may occur.

JUNCACEAE

Juncus L.

**J. acutus* L.: "Sharp Rush". Collected from sites near Berrigan and near Barham. NSW.

J. amabilis E. Edgar: Found in the Tocumwal area. NSW.

J. aridicola L. Johnson (ined.): Common and widespread wherever water lies for any length of time. NSW.

J. bufonius L.: "Toad Rush". Widespread; fairly common in moist situations. Palatable. Den.

J. flavidus L. Johnson (ined.): Collections made from area between Hay and Balranald, probably common elsewhere. NSW.

J. homalocaulis F. Muell.: Recorded from Millewa State Forest, near Mathoura, in which area it was common. Distribution unknown. Den.

J. ingeus N.A. Wakefield: "Giant Rush". Found only in low-lying areas adjacent to Murray River. Den.

J. semisolidus L. Johnson (ined.): One collection from south of Mathoura. NSW.

J. subsecundus N.A. Wakefield: Recorded from the Caldwell-Moama district. NSW.

J. usitatus L. Johnson: Common throughout the area, particularly along irrigation channels. NSW.

Some of the species listed have not yet been described but are well-known and will be dealt with in a forthcoming revision (L.A.S. Johnson, pers. comm.).

LILIACEAE

Anguillaria R. Br.

- A. dioica* R. Br.: "Early Nancy". Common in grassland pastures in southern and eastern districts. Palatable. Den.

Artthropodium R. Br.

- A. milleflorum* (DC.) Macbride: "Pale Vanilla-lily". Relatively uncommon except in grassland areas of southern and eastern districts. Palatable. Den.
- A. minus* R. Br.: "Small Vanilla-lily". Relatively uncommon except in southern and eastern grasslands. Palatable. Den.

Asparagus L.

- **A. officinalis* L.: "Asparagus". Recorded only from Deniliquin area, where it is found on heavy clay soil. Presumably a garden escape. Den.

Asphodelus L.

- **A. fistulosus* L.: "Onion Weed". Very common weed on light soils in western areas. Unpalatable. Den.

Bulbinopsis Borzi

- B. bulbosa* (R. Br.) Borzi: "Native Leek". Widespread but of sparse occurrence. Palatable; reputedly poisonous when eaten in quantity. Den.
- B. semibarbata* (R. Br.) Borzi: "Leek Lily". Widespread, locally very common, especially on light soils. Palatable. Den.

Dianella Lam. ex Juss.

- D. laevis* R. Br.: "Pale Flax-lily". Sparsely distributed throughout protected areas of forest and woodland in southern districts. Apparently palatable. Den.

Dichopogon Kunth

- D. fimbriatus* (R. Br.) Macbride: "Nodding Chocolate Lily". Sparse occurrence in woodlands and grasslands in southern districts. Palatable. Den.

Thysanotus R. Br.

- T. patersonii* R. Br.: "Twining Fringe-lily". Restricted to protected areas in eastern districts. Den.

Tricoryne R. Br.

- T. elatior* R. Br.: "Yellow Rush-lily". Recorded only from sandy soil in Millewa State Forest, near Mathoura, where locally common. Den.

XANTHORRHOEACEAE

Lomandra Labill.

- L. effusa* (Lindl.) Ewart: "Scented Mat-rush". Locally common on sandy-loam soils in southern districts. Unpalatable. Den.
- L. leucocephala* (R. Br.) Ewart ssp. *robusta* A. Lee: "Woolly Mat-rush". Recorded only from Tocumwal cemetery; sandy soil. Den.

- L. multiflora* (R. Br.) Britten: "Many-flowered Mat-rush". Recorded only from Tocumwal cemetery; sandy soil. Den.

AMARYLLIDACEAE

Calostemma R. Br.

- C. purpureum* R. Br.: "Wilcannia Lily". Generally uncommon, occurring in localized patches in low-lying areas in woodlands and grasslands. Apparently palatable. Included under *C. purpureum* is *C. luteum* Sims. Den.

HYPOXIDACEAE

Hypoxis L.

- H. pusilla* Hook. f.: "Tiny Star". Widespread and common in grasslands on loam and clay soils. Palatable. Den.

IRIDACEAE

Romulea Maratti

- **R.* sp. (probably *R. minutiflora* Klatt): "Small-flowered Onion Grass". Very common in heavily grazed pastures adjacent to areas of habitation, generally on clays and clay-loams; also a garden weed. Unpalatable. Den.

ORCHIDACEAE

Caladenia R. Br.

- C. dilatata* R. Br. var. *dilatata*: "Green-comb Spider Orchid". One record only, from "Zara," Wanganella, 1917. NSW.

Diuris Sm.

- D. pedunculata* R. Br.: "Golden Moths". Extremely rare, one collection from sandy soil near Tocumwal. Den.

Microtis R. Br.

- M. unifolia* (Forst. f.) Reichenb.: "Common Onion-orchid". Of sparse occurrence, though locally common in wet situations in forest areas along Murray River. Den.

DICOTYLEDONEAE

CASUARINACEAE

Casuarina Adans.

- C. cristata* Miq. ssp. *pauper* (F. Muell. ex Miq.) L. Johnson: "Belah". Recorded from Deniliquin and Moama; extremely rare in Riverine Plain although it is common in adjacent country to north and west. A low grade though useful drought forage where it is available in quantity. NSW.
- C. luehmannii* R.T. Baker: "Bull Oak". Widespread on light soils. Coarse and unpalatable foliage, low-grade timber. Den.

CANNABACEAE

Cannabis L.

- **C. sativa* L.: "Hemp". One collection from forest area south of Deniliquin. Den.

URTICACEAE

Parietaria L.

P. debilis Forst. f.: "Forest Pellitory". One collection from damp area in *Eucalyptus largiflorens* woodland, near Conargo. Distribution unknown. Den.

Urtica L.

**U. urens* L.: "Small Nettle". A weed of waste places and cultivated land, more common on light soils. Den.

PROTEACEAE

Hakea Schrad.

H. leucoptera R. Br.: a "Needlewood". Widespread and common, usually in localized areas on light soil. Foliage unpalatable. Den.

H. tephrosperma R. Br.: a "Needlewood". Apparently of similar distribution and occurrence to *H. leucoptera*. Den.

LORANTHACEAE

Amyema Tiegh.

A. linophyllum (Fenzl) Tiegh. ssp. *orientale* Barlow: "Mistletoe". Recorded from near Mathoura; host tree *Casuarina luehmamii*. Apparently widespread. Den.

A. miquelii (Lehm. ex Miq.) Tiegh.: "Mistletoe". Widespread and very common on species of *Eucalyptus*. Den.

A. miraculosum (Miq.) Tiegh. ssp. *boormanii* (Blakely) Barlow: "Mistletoe". Recorded from near Wanganella; host tree *Eremophila longifolia*. Widespread. Den.

A. preissii (Miq.) Tiegh.: "Mistletoe". Recorded from near One Tree; host tree *Acacia* sp. Probably widespread. Den.

A. quandang (Lindl.) Tiegh. var. *quandang*: "Grey Mistletoe". Widespread and common on *Acacia pendula*. Den.

Lysiana Tiegh.

L. exocarpi (Behr ex Schlecht.) Tiegh. ssp. *exocarpi*: "Mistletoe". Recorded from near Wanganella; host tree *Eremophila longifolia*. Widespread. Den. Intermediates between this and ssp. *diamantinensis* (J.M. Black) Barlow occur as well as intermediates between ssp. *diamantinensis* and ssp. *tenuis* (Blakely) Barlow. Den.

SANTALACEAE

Exocarpos Labill.

E. aphyllus R. Br.: "Jointed Cherry". Widespread but uncommon; prefers sandy and clay-loam soils. Den.

E. strictus R. Br.: "Slender Cherry". Sparsely distributed; apparently restricted to forest areas. Den.

Santalum L.

S. acuminatum (R. Br.) A. DC.: "Quandong". Widespread but now of very sparse occurrence, usually found on loam and sandy-loam soils. Moderately palatable. Den.

- S. lanceolatum* R. Br.: "Sandalwood". Widely distributed but rather uncommon; confined to sandy and loam soils. Unpalatable. Den.

POLYGONACEAE

Acetosa Mill.

- * *A. vesicaria* (L.) Löve: "Pink Dock", "Bladder Dock". Collected from bank of Mulwala Canal between Barooga and Berrigan. Not known to occur elsewhere. Den.

Acetosella Fourr.

- * *A. vulgaris* Fourr. sens. lat. (= *Rumex acetosella* L.): "Sorrel". Common only in localized areas in regions of higher rainfall, usually restricted to light soils. Suspected of being poisonous to stock. Den.

Emex Neck.

- * *E. australis* Steinh: "Spiny Emex", "Double Gee". Uncommon, occasional plants on light soil. Unpalatable, with troublesome spiny fruits. Den.

Muehlenbeckia Meisn.

- M. cunninghamii* (Meisn.) F. Muell.: "Lignum". Widespread and common throughout, in swampy or intermittently flooded country. Unpalatable, though grazed occasionally. Den.

- M. diclina* (F. Muell.) Druce: "Slender Lignum". One collection from near "Manfred" southwest of Ivanhoe. NSW.

- M. horrida* H. Gross: Uncommon; distribution unknown. Two collections, one near Wakool, one near Hay. Den.

Polygonum L.

- * *P. arenastrum* Bor.: "Wireweed". Collected from area between Maude and Oxley. Probably common elsewhere. NSW.

- * *P. aviculare* L.: "Wireweed". Widespread weed; common, particularly in disturbed areas on light soils. Of low palatability, suspected of causing stock disorders. Den.

- P. decipiens* R. Br.: "Slender Knotweed". Widespread; common around swamps and streams, on soil from which water has receded. Den.

- P. hydropiper* L.: "Waterpepper". Infrequent plants in flooded country along Murray River. Suspected of causing stock disorders; low palatability. Den.

- P. lapathifolium* L.: "Pale Knotweed". Widespread, common in localized areas along streams and the edges of swamps. Den.

- P. plebeium* R. Br.: "Small Knotweed". Widespread but habitat apparently restricted to clay soil near water. Den.

- P. prostratum* R. Br.: "Creeping Knotweed". Fairly widespread, common on river flats, uncommon elsewhere. Palatable. Den.

Rumex L.

- R. bidens* R. Br.: Collected from Lake Whymoul, near Barham. NSW.
- R. brownii* Campd. "Swamp Dock". Widespread and common in moist areas Den.
- **R. conglomeratus* Murr.: "Clustered Dock". Widespread and fairly common in moist situations. Den.
- **R. crispus* L.: "Curled Dock". Widespread and very common weed in moist areas. Den.
- R. crystallinus* Lange: "Shiny Dock". Widespread and common, very prevalent where water has receded in shallow swamps. Den.
- R. dumosus* A. Cunn. ex Meisn.: "Wiry Dock". Widespread; occurs as scattered plants in a wide variety of situations. Den.
- R. tenax* Rech. f.: Widespread and common in damp situations. Den.

CHENOPODIACEAE

Atriplex L.

- A. angulata* Benth.: "Fan Saltbush". Collected along Hay-Balranald road. Not known to occur elsewhere on Plain. Den.
- A. conduplicata* F. Muell.: From near Booligal, apparently rare. NSW.
- A. eardleyae* Aellen: Collected from Wanganella and Booligal but not common on the Riverine Plain. Moderately palatable. NSW.
- A. holocarpa* F. Muell.: "Pop Saltbush". Widespread north of the Murrumbidgee River. Somewhat similar in appearance to *A. spongiosa* of which it has at times been considered a variety, but distinct. Of low palatability. Den.
- A. leptocarpa* F. Muell.: "Slender-fruited Saltbush". Widespread and locally common, particularly on loam and clay-loam soils. Palatable and provides useful forage during dry periods. Den.
- A. lindleyi* Moq.: Widespread and common in all but southern districts, very prevalent in degraded *A. vesicaria* pastures. Apparently unpalatable. Den.
- A. nummularia* Lindl.: "Oldman Saltbush". Widespread and originally very common—now restricted to protected areas adjacent to homesteads in the south and to areas receiving additional water in the form of run-off in the north and west. Not particularly palatable but provides good forage during drought. Den.
- A. pseudocampanulata* Aellen: Annual species common throughout, particularly in clay soils along roadsides. Unpalatable. Den.
- A. spongiosa* F. Muell.: "Pop Saltbush". Distribution and forage value similar to that of *A. holocarpa*. Den.
- A. spinibractea* R.H. Anderson: Collected from Jerilderie cemetery and near Deniliquin. Den.
- A. suberecta* Verdoorn: Common in localized areas on a range of soil types. Previously included under *A. muelleri* which is a more northern species. Relatively palatable but rarely occurring in sufficient quantity to be of any great value. Den.

- A. vesicaria* Hew. ex Benth.: "Bladder Saltbush". Common, extending over wide areas from Deniliquin north. Whilst not highly palatable it forms a valuable maintenance forage during dry times, provides cover for the more palatable associated grasses and forbs and protects the soil surface from erosion. Den.

Babbagia F. Muell.

- B. acroptera* F. Muell. et Tate var. *deminuta* J.M. Black: "Babbagia". Common on roadsides and in degraded saltbush pastures, mainly north of Hay. Moderately palatable. Den.

Bassia All.

- B. bicornis* (Lindl.) F. Muell. var. *bicornis*: "Goathead Burr". Moderately common, particularly in northern areas, although generally of localized occurrence. Eaten at times but generally regarded as a weed. Den.
- B. biflora* (R. Br.) F. Muell. var. *biflora*: Occasional occurrence, more common in northern areas, usually as understorey to larger shrubs such as *Atriplex nummularia*. Den.
- B. birchii* (F. Muell.) F. Muell.: "Galvanized Burr". Originally not common on the Riverine Plain, this species has of recent years invaded large areas of light soil in the Hay and Deniliquin districts. A troublesome noxious weed. Den.
- B. brachyptera* (F. Muell.) R.H. Anderson: Common throughout saltbush country, to which it is apparently restricted. Lacks spines and is palatable to stock. Den.
- B. diacantha* (Nees) F. Muell.: "Grey Copper Burr". Very prevalent on light soils around northern and western perimeter of the Riverine Plain, with occasional plants being found throughout the Plain, usually on well drained soils. Fairly palatable despite spiny fruits. Den.
- B. divaricata* (R. Br.) F. Muell.: "Copper Burr". Common in saltbush country, where it is prevalent in depressions and on self mulching clays. Very spiny, rarely grazed. Den.
- B. intricata* R.H. Anderson: Common throughout degraded saltbush pastures north and west of Hay. Unpalatable. Den.
- B. lanicnspis* (F. Muell.) F. Muell.: Uncommon except on small areas of light soil supporting *Maireana pyramidata* in the north and west. Palatable, with soft spines until maturity. Den.
- B. paradoxa* (R. Br.) F. Muell. var. *paradoxa*: Common on light soils along northern and western perimeter of the Riverine Plain, occasionally on clay soils north of Hay. Not readily acceptable to stock but eaten during dry times. Den.
- B. patentiuspis* R.H. Anderson: a "Copper Burr". Restricted to perimeter of Riverine Plain to the north and west and to outliers of light soil extending into the Plain. Spiny fruits ensure its utilization only in times of stress. Den.
- B. quinquecusps* (F. Muell.) F. Muell. var. *quinquecusps*:
var. *semiglabra* Ising:
var. *villosa* (Benth.) J.M. Black: "Black Roly-poly". Widespread and very common on all but sandy soils, the density of these taxa, which are usually quite distinct from each other, increases on heavily grazed areas such as stock routes. Moderately palatable when young but unacceptable after the formation of spines. Den.

B. stelligera (F. Muell.) F. Muell. ex Benth.: "Star Bush". Widespread and may be locally common, particularly in saltbush communities. Apparently not highly palatable. Den.

B. tricuspidata (F. Muell.) R.H. Anderson: "Three-spined Roly-poly". Occurs throughout all saltbush communities and may form dense stands in overgrazed saltbush pastures. Unpalatable and very spiny when mature. Den.

Chenopodium L.

**C. album* L.: "Fat Hen". A weed of habitation and neglected cultivation, mainly restricted to the higher rainfall areas of the southern Riverine Plain. Occasionally grazed when young but generally regarded as a weed. Den.

C. carinatum R. Br.: "Keeled Goosefoot". Widespread and common on loams and sand-loams. Aromatic and apparently unpalatable as it is rarely grazed when other forage is available. *C. pumilio*, once considered a separate species, is now regarded as a form of *C. carinatum*. Den.

C. pseudomicrophyllum Aellen: Occasional occurrence in south-eastern districts, not noted elsewhere. Den.

**C. murale* L.: "Nettle-leaved Goosefoot". Common on roadsides and in waste places in southern districts, usually more prevalent on the lighter soil types. Not readily acceptable to stock. Den.

C. nitratum (F. Muell.) F. Muell. ex Benth.: "Nitric Goosefoot", "Indigo Bush". Very widespread and common, particularly in depressions and drainage lines subject to occasional inundation. Not highly palatable but provides good quality forage during drought. Den.

C. polygonoides (J. Murr) Aellen: Apparently rare, collected from near Deniliquin and near Hay. NSW.

C. ulicinum Gandoger: One collection from near Mossgiel. NSW.

C. sp.: A plant with a strong and unpleasant trimethylamine odour. Fairly common in grassland pastures on clay-loam soils in Deniliquin area. Den.

Enchylaena R. Br.

E. tomentosa R. Br.: "Ruby Saltbush". Widespread and common in most communities, preferring loams and sandy-loams. Fairly palatable and provides forage during drought. Den.

Maireana Moq. (= *Kochia* Roth.)

M. aphylla (R. Br.) P.G. Wilson: "Cotton Bush". Widespread throughout the Riverine Plain, becoming the dominant in some areas, particularly in the Deniliquin-Balranald-Hay region. Not highly palatable, particularly when the leaves have fallen, but it provides some forage during dry times. Den.

M. brevifolia (R. Br.) P.G. Wilson: "Short-leaved Bluebush". Widespread but rarely common except in areas of loam soil subject to occasional flooding and on light soils of a calcareous nature. Moderately palatable. Den.

M. cheelii (R.H. Anderson) P.G. Wilson: "Chariot Wheels". Occurrence apparently restricted to saltbush plains of the Deniliquin-Hay region. Not grazed to any extent unless other forage is in short supply. Den.

M. decalvans (Gandoger) P.G. Wilson (= *Kochia tomentosa* F. Muell. var. *tenuifolia* (Benth.) J.M. Black): "Black Cotton Bush". Not common and apparently

restricted to the grasslands in the south and east of the Riverine Plain. Moderately palatable. Den.

M. enchylaenoides (F. Muell.) P.G. Wilson (= *Duriala villosa* (F. Muell.) Ulbr.): Common in localized areas on loam and clay-loam soils in southern and eastern districts. Den.

M. excavata (J.M. Black) P.G. Wilson: "Bottle Fissure Weed". Widespread, particularly in southern and eastern districts but rarely common except in grasslands on clay-loam soils. Usually grazed only in stress periods. Den.

M. humillima (F. Muell.) P.G. Wilson: Locally common on clay-loams in Deniliquin area—probably occurs to the north and east also. Den.

M. microcarpa (Benth.) P.G. Wilson: Recorded from near Oxley. NSW.

M. microphylla (Moq.) P.G. Wilson: (= *K. tamarascina* auct. non (Lindl.) J.M. Black): "Eastern Cottonbush". Occasional occurrence in Deniliquin-Tocumwal districts, elsewhere rare. Den.

M. pentagona (R.H. Anderson) P.G. Wilson: "Slender Fissure Weed". Distributed throughout grassland and saltbush communities, very common in Deniliquin-Hay region on clay and clay-loam soils. A useful forage plant during stress periods. Den.

M. pyramidata (Benth.) P.G. Wilson: "Black Bluebush". Localized communities occur on light calcareous soils throughout the Riverine Plain, becoming more prevalent to the north and west. Whilst not particularly palatable the bush is utilized to some extent during drought. Den.

M. sedifolia (F. Muell.) P.G. Wilson: "Pearl Bluebush". Not as widespread or common in the Riverine Plain as *M. pyramidata*, being confined mainly to the western regions where scattered bushes may occur in association with *M. pyramidata*. Grazed only in stress periods. Den.

Malacocera R.H. Anderson

M. tricornis (Benth.) R.H. Anderson: "Soft-horned Saltbush". Relatively common on the saltbush plains, elsewhere uncommon. Palatable, usually grazed before the saltbush. Den.

Pachycornia Hook. f.

P. tenuis (Benth.) J.M. Black: a "Glasswort". Distribution restricted to the saltbush plains, where it may be common in roadside drains, depressions and somewhat saline situations. Apparently unpalatable. Den.

Rhagodia R. Br.

R. nutans R. Br.: "Climbing Saltbush". Two forms of this plant are known to occur in the area. Very widespread and common in all communities, more frequent in shaded and protected situations. Palatable—a useful forage species. Den.

R. spinescens R. Br.: "Thorny Saltbush". Widespread and common in most communities, preferring loam and clay-loam soils. Relatively palatable and provides forage during drought. Den.

Salsola L.

S. kali L. var. *kali*: "Soft Roly-poly", "Buckbush". Widespread, common on sands and sandy-loams, where it may be the dominant vegetation. The young

plants are grazed by sheep but they are generally ignored when the spines have hardened. Den. Var. *strobilifera* Benth. almost certainly occurs in the area, but no specimens have been collected.

Scleroblitum Ulbr.

- S. atriplicinum* (F. Muell.) Ulbr. (= *Chenopodium atriplicinum* (F. Muell.) F. Muell.): "Purple Goosefoot". Widespread and common on clay and clay-loam soils in years of higher rainfall, otherwise restricted to flooded areas and depressions. Palatable when young, suspected (without conclusive proof) of stock poisoning. Den.

Suaeda Forsk.

- S. sp.*: Common on saline soil in irrigation area near Tullakool, where few other plants can persist. Apparently unpalatable. Den.

AMARANTHACEAE

Alternanthera Forsk.

- A. denticulata* R. Br.: "Lesser Joyweed". Widespread, though more prevalent to the south and east with a preference for loam and clay-loam soils. Palatable but of limited value. Den.
- **A. pungens* Kunth: "Khaki Weed". Weed, confined to areas of habitation in southern and eastern districts and becoming more prevalent. Moderately palatable. Den.

Amaranthus L.

- **A. albus* L.: "Tumbleweed". A weed of habitation, common in yards of Deniliquin Railway Station. Den.
- **A. hybridus* L. sens. lat.: "Slim Amaranth". A weed of home gardens and waste places. Unpalatable. Den.
- A. macrocarpus* Benth.: Uncommon, collected 40 km south-west Deniliquin, distribution unknown. Den.
- **A. retroflexus* L.: One collection, from railway yards, Deniliquin. Den.
- **A. viridis* L.: "Green Amaranth". A weed on waste land and cultivated areas. Not grazed. Den.

Boerhavia L.

- B. diffusa* L.: "Tar-vine". Widespread and common on all soil types and in most communities. Palatable and of some forage value. Den.

Ptilotus R. Br.

- P. atriplicifolius* (A. Cunn. ex Moq.) Benth var. *atriplicifolius*: Only collection from loam soil, Coleambally Irrigation District. Den.
- P. erubescens* Schlecht.: One collection, from roadside near Hill Plain, 1954. NSW.
- P. exaltatus* Nees var. *semilanatus* (Lindl.) Maid. et Betcher (= *P. semilanatus* (Lindl.) F. Muell. ex Black): "Lamb Tails". Common on brown clay and loam soils in the southern and eastern districts. Palatable and provides useful forage. Den.
- P. macrocephalus* (R. Br.) Poir.: Collected from near Bundure siding, 40 km north of Jerilderie, on red clay soil. NSW.

P. uobilis (Lindl.) F. Muell.: "Yellow Tails". Occasional occurrence in Wanganella district. NSW.

P. spathulatus (R. Br.) Poir.: "Pussy Tails". Occurs frequently on clay-loam and loam soils in grassland pastures. Palatable. Den.

AIZOACEAE

Disphyma N.E. Br.

D. clavellatum (Haw.) Chinnock (= *D. blackii* Chinnock; *D. australe* (Soland.) J.M. Black): "Pigface". Common in scattered areas throughout saltbush country. It occurs on most soil types but is more prevalent on the heavy clays. Not palatable but may be grazed sparingly in times of stress. Den.

Galenia L.

**G. secunda* (L. f.) Sond.: Occasional occurrences on loam and clay soils in southern areas. Den.

Glinus L.

G. lotoides L.: "Hairy Carpet-weed". Widespread but common only in localized areas, most frequently occurring on soil from which water has receded or dried up. Den.

Meseubryanthum L.

**M. crystallinum* L.: (= *Gasoul crystallinum* (L.) Rothm.) "Ice-plant". Infrequent, found only in years of high rainfall on sandy-loam soils where competition has been reduced by cultivation or by previous heavy grazing. Den.

Sarcocolla J.M. Black

S. praecox (F. Muell.) S.T. Blake: Locally common in patches throughout saltbush country. Apparently not highly palatable. Den.

Tetragonia L.

T. tetragonioides (Pall.) Kuntze: "New Zealand Spinach". Widespread and common in years of good rainfall, growing on most soil types. Palatable and regarded as good fodder. Den.

Trianthema L.

T. galericulata Melville: Locally common in small areas on sandy-loam and loam soils near Deniliquin. Relatively unpalatable. Den.

T. triquetra Willd.: Widespread and fairly common in years of high rainfall. Den.

PORTULACACEAE

Calandrinia Kunth

C. eremaea Ewart: "Small Purslane". Common on sandy-loam soils in eastern areas. Probably palatable. Den.

C. volubilis Benth.: "Twining Purslane". Common throughout the saltbush country where it is found growing around the bases of the bushes. Palatable but protected to some extent by the bushes. Den.

Portulaca L.

P. oleracea L.: "Pigweed". Wide distribution throughout the Riverine Plain on loams and clay-loams and occurring in almost all communities. Palatable and provides summer forage in years of suitable rainfall. Den.

CARYOPHYLLACEAE

Cerastium L.

**C. glomeratum* Thuill.: "Mouse-ear Chickweed". Common in house gardens and waste places; isolated occurrences in woodlands in southern areas. Den.

Petrorhagia (Ser. ex DC.) Link

**P. velutina* (Guss.) Ball et Heywood: "Velvet Pink". Locally common in southern areas, particularly during good years. Den.

Polycarpon L.

**P. tetraphyllum* (L.) L.: "Four-leaf All-seed". A common weed of garden paths and lawns—infrequent elsewhere. Den.

Silene L.

**S. gallica* L.: "Catchfly". Collected from eastern boundary of Riverine Plain, near Narrandera, on sandy-loam and from "Zara", Wanganella. Den.

Spergularia (Pers.) J. et C. Presl

**S. rubra* J. et C. Presl sens. lat.: "Sand Spurry". Very widespread and common in all communities. A useful primary colonizer of bare soil. Palatable. Den.

Stellaria L.

S. angustifolia Hook.: "Swamp Starwort". Collected from swamp near Wanganella, possibly occurs elsewhere in similar situations. Den.

**S. media* (L.) Vill.: "Chickweed". Weed of gardens and lawns, occasionally spontaneous in woodlands. Den.

Vaccaria Med.

**V. pyramidata* Med.: "Bladder Soapwort". One collection from wheat crop near Barham. Den.

RANUNCULACEAE

Clematis L.

C. microphylla DC. var. *microphylla*: "Narrow-leaved Clematis". Climber now restricted to relatively undisturbed areas of woodland on sandy-loam and loam soils, where it may be locally common. Den.

Myosurus L.

M. minimus L. sens. lat.: "Mouse-tail". Widespread and relatively common on clay-loams and clays in years of good autumn and winter rainfall. Palatable. Den.

Ranunculus L.

- R. inundatus* R. Br. ex DC.: "River Buttercup". Found in low-lying areas along the Murray system. Den.
- R. lappaceus* Sm.: "Buttercup". Widespread and locally common in swampy habitats in southern and eastern districts. Den.
- **R. muricatus* L.: "Sharp Buttercup". Common in swamps in southern areas. Den.
- R. papulentus* Melville: Collected from swamp at "Ulonga", near Onc Tree. Distribution unknown. Den.
- R. pentandrus* J.M. Black var. *platycarpus* (F. Muell.) Hj. Eichler: "Smooth Buttercup". Widespread and common, particularly in years of good autumn and winter rainfall, on a wide variety of soils. Not particularly palatable but eaten at times. Den.
- R. pumilio* R. Br. ex DC. var. *pumilio*: One record from Murrumbidgee River near Hay, possibly overlooked elsewhere. NSW.
- var. *politus* Melville: Common in years of higher rainfall. Found on clays and loams in southern areas. Relatively unpalatable. Den.
- R. undosus* Melville: Locally common in swamp near Wanganella. Distribution unknown. Den.

PAPAVERACEAE

Papaver L.

- **P. hybridum* L.: "Rough Poppy". A weed of cultivated land, extending into native pastures during good rainfall years. Unpalatable but suspected of causing stock disorders when fed in conserved fodder. Den.

FUMARIACEAE

Fumaria L.

- **F. bastardii* Boreau: One collection from Millewa State Forest where locally common on clay soils. Den.
- **F. densiflora* DC.: "Dense Fumitory". Widespread on loam soils, though rarely common. Den.

BRASSICACEAE (= CRUCIFERAE)

Alyssum L.

- A. linifolium* Steph. ex Willd.: Common in northern areas in years of good rainfall. Den.

Arabidella (F. Muell.) Schulz

- A. nasturtium* (F. Muell.) E. Shaw (= *Blennodia nasturtioides* (F. Muell.) Druce): "Yellow Cress". Widespread, more abundant in northern districts, usually on loam and clay-loam soils. Palatable. Den.

Brassica L.

- **B. tournefortii* Gouan: "Wild Turnip". A widespread weed of roadsides and waste places, found on a wide variety of soils. Unpalatable. Den.

Capsella Medik.

- **C. bursa-pastoris* (L.) Medik.: "Shepherd's Purse". Widespread, most frequent on loam and clay-loam soils. Rarely utilized. Den.

Cardaria Desv.

- **C. draba* (L.) Desv.: "Hoary Cress". Weed of gardens and roadsides, not common except in occasional patches. Den.

Coronopus Zinn.

- **C. didymus* (L.) Sm.: "Lesser Swinecress". Occasional weed of cultivation areas. Den.

Diplotaxis DC.

- **D. tenuifolia* (L.) DC.: "Sand Rocket". Weed, common in Deniliquin Railway yards. Den.

Geococcus Drumm. ex Harv.

- G. pusillus* Drumm. ex Harv.: "Earth Cress". Widespread, common in years of good rainfall. Den.

Harmsiodoxa Schulz

- H. blennodioides* (F. Muell.) Schulz (= *Blennodia blennodioides* (F. Muell.) Druce): "Hairy Cress". Occasional plants on light soils in northern areas, more frequent in country bordering northern and western districts. Moderately palatable. Den.

Hirschfeldia Moench

- **H. incana* (L.) Lagrèze-Fossat: "Buchan Weed". Weed of cultivation areas and roadsides. Den.

Lepidium L.

- L. fasciculatum* Thell.: "Bundled Peppergrass". Widespread and common, with a preference for loam and clay-loam soils. Moderately palatable. Den.
- L. hyssopifolium* Desv.: "Peppergrass". Widespread and common in all communities, more prevalent in southern districts. Relatively unpalatable but eaten during dry periods. Den.
- L. monolocoides* F. Muell.: "Winged Peppergrass". One record from CSIRO Falkner Memorial Field Station in 1945. Den.
- L. papillosum* F. Muell.: Locally common in clay soil west of Mossiel, distribution unknown. Den.

Menkea Lehm.

- M. australis* Lehm.: "Fairy Spectacles". Widespread in northern districts where it may be locally common. Den.

Phlegmatospermum Schulz

- P. cochlearinum* (F. Muell.) Schulz: Locally common in northern districts. Den.

Raphanus L.

- **R. raphanistrum* L.: "Wild Radish". Occasional weed of roadsides and waste places. Den.

Rapistrum Crantz

- **R. rugosum* (L.) All.: "Turnip-weed". Weed of cultivated land and waste places. Den.

Rorippa Scop.

- R. laciniata* (F. Muell.) L. Johnson: Locally common in southern areas, usually in depressions on clay soils. Den.

Sisymbrium L.

- **S. erysimoides* Desf.: "Smooth Mustard". Widespread weed which may be locally common, particularly in areas of high fertility such as sheep camps, and in leaf mulch beneath trees. Unpalatable. Den.
- **S. irio* L.: "London Rocket". Widespread, common in years of good rainfall, on most soil types. Unpalatable. Den.
- **S. orientale* L.: "Indian Hedge Mustard". Widespread weed in crops, fallows and waste places, on a variety of soils. Relatively unpalatable. Den.

Stenopetalum R. Br. ex DC.

- S. velutinum* F. Muell. Recorded from Wanganella, 1903. NSW.

RESEDACEAE

Reseda L.

- **R. luteola* L.: "Wild Mignonette". Weed of cultivated areas and roadsides in southern districts. Rarely eaten, suspected (without conclusive evidence) of poisoning stock. Den.

CRASSULACEAE

Crassula L.

- C. colorata* (Nees) Ostenf.: "Dense Stonecrop". Widespread in all communities. Of little forage value because of small size. Den.
- C. helmsii* (T. Kirk) Cockayne: Widespread, usually growing in mud or water. Den.
- C. macrantha* (Hook. f.) Diels et Pritzel: "Rufous Stonecrop". One collection from Deniliquin area, distribution unknown. Den.
- C. purpurata* (Hook. f.) Domin: "Purple Stonecrop". Widespread and common, particularly in moist places, often overlooked because of its small size. Den.
- C. sieberana* (Schultes et f.) Druce: "Austral Stonecrop". Widespread in all communities. Of little or no value because of its small size. Den.

PITTOSPORACEAE

Bursaria Cav.

- B. spinosa* Cav.: "Australian Blackthorn". Widespread in southern districts, usually occurs as shrub or small tree along roadsides and in lightly grazed areas on loam soils. Den.

Pittosporum Banks ex Gaertn.

- P. phylliraeoides* DC.: "Berrigan". Widespread tree, sparse occurrence on light soils. Den.

ROSACEAE

Aphanes L.

- A. australiana* (Rothm.) Rothm.: Collected only from Deniliquin area where locally common in years of high rainfall. Den.

Poterium L.

- **P. polygnum* Waldst. et Kit.: One collection from Coleambally Irrigation Area. Den.

Rosa L.

- **R. canina* L.: "Dog Rose". One collection from river flat near Barham. First record of this as naturalized in N.S.W. Den.

Rubus L.

- **R. fruticosus* L., sens. lat.: "Blackberry". Collected from frontage of Murray River near Picnic Point, east of Mathoura. Den.

MIMOSACEAE

Acacia Mill.

- A. acinacea* Lindl: "Gold-dust Acacia". Locally common on a range of soil types in the southern Riverine Plain. Dcn.
- A. aneura* F. Muell. ex Benth.: "Mulga". Recorded from Hay, 1886. Not known to occur now on the Riverine Plain. NSW.
- A. brachybotrya* Benth.: Widespread and locally common on sandy ridges. Den.
- A. colletioides* Benth.: Recorded from Hay, 1886. A common shrub in country to the north of the Riverine Plain but doubtful if present on the Plain today. NSW.
- A. dealbata* Link: One collection, from bank of Murray River near Barham, where locally common. Den.
- A. decora* Reichenb.: "Western Silver Wattle". Recorded from Jerilderie, 1916. NSW.
- **A. farnesiana* (L.) Willd.: One record, from 35 km north of Jerilderie. NSW.
- A. hakeoides* A. Cunn. ex Benth.: "Western Black Wattle". Apparently restricted to south-eastern districts, where it may be common locally, particularly on loam soils. Den.
- A. homalophylla* A. Cunn. ex Benth.: "Yarran". Widespread and locally common, restricted to light soils. Den.
- A. lineata* A. Cunn. ex G. Don: "Streaked Acacia". Only known occurrence near Lalaly School in extreme south-east, where common. Den.
- A. loderi* Maiden: "Ncelie". Occasional occurrences on light soils in northern districts. NSW.
- A. montana* Benth.: "Mallee Acacia". Occasional plant in Tocumwal-Berrigan district. Den.
- A. osswaldii* F. Muell.: "Miljee". Widespread, occurring as occasional trees on the lighter soil types. Den.

- A. pendula* A. Cunn. ex G. Don: "Boree" or "Myall". Widespread though more common in south eastern districts where it may be the dominant tree species on areas of clay-loam soils. A useful drought fodder. Its health and appearance invariably affected by the larvae of the bag-shelter moth. Den.
- A. pycnantha* Benth.: "Broad-leaved Wattle". Isolated occurrences in Tocumwal-Berrigan area. Den.
- A. salicina* Lindl.: "Cooba" or "Native Willow". Widespread, common along water courses and on the sandy ridges of prior streams. Den.
- A. stenophylla* A. Cunn. ex Benth.: "River Cooba". Common along banks of most streams and in some low-lying situations. Den.
- A. victoriae* Benth.: "Prickly Wattle". Uncommon, restricted to light soils in western and northern districts. Den.

CAESALPINIACEAE

Cassia L.

- C. eremophila* A. Cunn. ex Vogel var. *coriacea* (Benth.) Symon: "Desert Cassia". Widespread, may be locally common on sandy-loam soils. Of some fodder value during drought. Den.
- var. *eremophila*: "Punty Bush". Widespread on sand and loam soils, less common than var. *platypoda*. Den.
- var. *platypoda* (R. Br.) Benth.: "Punty Bush". Widespread, locally common on sandy-loam soils. Browsed at times. Den.

FABACEAE (= PAPILIONACEAE)

Alhagi Gagnebin

- **A. pseudalhagi* (Bieb.) Desv. (= *A. camelorum* Fisch.): "Camel Thorn". One collection, from Moulamein, 1947. A noxious weed. NSW.

Eutaxia R. Br. ex Ait.

- E. microphylla* (R. Br. ex Ait.) J.M. Black: "Eutaxia". Relatively uncommon, apparently restricted to woodlands in southern and eastern districts. Den.

Glycine L.

- G. clandestina* Wendl.: "Twining Glycine". Restricted to the south-eastern districts, where it may be locally common. Palatable. Den.

Glycyrrhiza L.

- G. acanthocarpa* (Lindl.) J.M. Black: "Native Liquorice". Widespread, occasionally locally common in favourable situations. Palatable, but a nuisance in sheep country because its burry seed-pods contaminate wool. Den.

Lotus L.

- L. australis* Andr.: "Austral Trefoil". Recorded in southern and eastern districts, distribution uncertain. Palatable, may at times be poisonous to stock. Den.
- L. cruentus* Court: "Red-flowered Trefoil". Widespread and common on light soils. Palatable, probably poisonous to stock at times. Den.
- The above two species may hybridize.

Medicago L.

- **M. laciniata* (L.) Mill.: "Cut-leaved Medic". Widespread, but more common in northern and western districts, usually most plentiful on light soils. Palatable, but the spiny burrs may contaminate wool. Den.
- **M. minima* (L.) Bart.: "Woolly Burr Medic". Widespread and common, mainly on light soils but may also occur on the puffs of gilgais. Palatable, with spiny burrs which contaminate wool. Den.
- **M. polymorpha* L. var. *vulgaris* (Benth.) Shin.: "Burr Medic". Widespread and very common on a range of soil types, reaching maximum size and density on grey clay soils. Palatable and a valuable fodder plant despite the nuisance value of its burr as a contaminant of wool. Den.
- **M. praecox* DC.: "Small-leaved Burr Medic". Collected from Hay and Wakool districts but distribution and abundance uncertain because of similarity to the very common *M. polymorpha*. NSW.
- **M. truncatula* Gaertn. var. *lougispina* Urb.: "Barrel Medic". Widespread and fairly common, particularly on clay soils. Palatable and a useful contributor to winter-spring forage. Not a serious contaminant of wool as the spines of the pods are relatively short. Den.

Melilotus Mill.

- **M. indica* (L.) All.: "Hexham Scent". Apparently restricted to southern and eastern districts, where it may be an escape from irrigated pastures. Palatable. Den.

Prosopis L.

- **P. juliflora* (Sw.) DC.: "Mesquite". One record from near Barham. Den.

Psoralea L.

- P. cinerea* Lindl.: One collection from swamp near Booroorban. Distribution unknown. Den.
- P. tenax* Lindl.: Recorded from 34 km south of Jerilderie. Den.

Swainsona Salisb.

- S. murrayana* Wawra ssp. *eciliata* A. Lee: Only one known collection, from "Zara" near Wanganella in 1905. NSW.
- spp. *murrayana*: "Slender Swainsona". Widespread, though more common on clay and clay-loam soils in south-eastern districts. Palatable. Den.
- S. oroboides* F. Muell. ex Benth. ssp. *reticulata* (J.M. Black) A. Lee: and ssp. *sericea* A. Lee: Both subspecies are apparently confined to clay and clay-loam soils in the southern and eastern districts, where they may be common. Palatable. Den.
- S. phacoides* Benth. ssp. *phacoides*: "Dwarf Swainsona". Widespread, but restricted to sands and sandy-loams. Palatable. NSW.
- S. plagiotropis* F. Muell.: One collection from near Jerilderie, distribution unknown. Den.
- S. procumbens* (F. Muell.) F. Muell.: "Broughton Pea". Widespread and common on a wide range of soils, more prevalent in moist sites on clay and clay-loam soils. Palatable, but may cause a disease known as "pea-struck" or "loco-disease" in sheep when eaten in quantity. Den.

- S. swainsonioides* (Benth.) A. Lee: "Downy Swainsona". Widespread, most common in moist situations on clay soils. Palatable, but may cause "pea-struck" or "loco-disease" in sheep. Den.

Templetonia R. Br.

- T. egena* (F. Muell.) Benth.: "Desert Broombush". Uncommon, known only from Moulamein area, where it occurs as scattered plants on calcareous clay. Relatively unpalatable. Den.

Trifolium L.

- **T. angustifolium* L.: "Narrow-leaved Clover". Found only in southern areas where it may be locally common. Den.
- **T. arvense* L.: "Haresfoot Clover". Common only in southern and eastern districts where it is restricted to sandy soils. Palatable. Den.
- **T. campestre* Schreb.: "Hop Clover". Found on river flat near Deniliquin, where common, distribution otherwise unknown. Den.
- **T. cernuum* Brot.: "Drooping-flowered Clover". Occurs in localized areas between Deniliquin and Tocomwal. Palatable. Den.
- **T. glomeratum* L.: "Clustered Clover". Widespread, but common only in southern districts. Palatable. Den.
- **T. tomentosum* L.: "Woolly Clover". Widespread, though relatively uncommon, occurring on a range of soil types. Palatable. Den.

Trigonella L.

- **T. ornithopodioides* (L.) DC.: Recorded from Barham, Berrigan and Deniliquin. Apparently very palatable. NSW.
- T. suavisissima* Lindl.: "Cooper Clover". Locally common on flooded country of the lower Lachlan River. Rare elsewhere. Palatable. Den.

Vicia L.

- **V. sativa* L.: "Common Vetch". Found on river flats in southern areas where it may be common. Palatable. Den.

GERANIACEAE

Erodium L'Hérit.

- **E. botrys* (Cav.) Bertol.: "Long Storksbill". Distribution apparently restricted to the more favoured southern districts, where it may be common. Relatively unpalatable, with sharp pointed seeds which penetrate and damage the flesh of sheep. Den.
- **E. cicutarium* (L.) L'Hérit. ex Ait.: "Common Crowfoot". Widely distributed on all soil types. Palatable and a useful forage species. Den.
- E. crinitum* Carolin.: "Blue Crowfoot". Widespread on most soil types, in favourable years occurring as dense pure stands on sandy soils. Relished by stock and provides excellent forage. Its sharp pointed seeds can cause damage to sheep. Den.
- **E. moschatum* (L.) L'Hérit. ex Ait.: "Musky Crowfoot". Generally confined to southern districts where it may be locally common, particularly on loam soils.

Relatively unpalatable, probably on account of its musky odour and taste, but eaten at times. Den.

Geranium L.

G. retrorsum L'Hérit. ex DC.: Uncommon, occasional plants occurring on clay soils in favourable years. Den.

G. solanderi Carolin var. *solanderi*: One collection from sandy-loam soil 48 km south-east of Deniliquin. Den.

OXALIDACEAE

Oxalis L.

O. corniculata L.: "Yellow Wood Sorrel". Widespread but infrequent on all soil types, preferring moister and shadier sites. Palatable. Den.

**O. pes-caprae* L.: "Soursob", "Yellow Oxalis". A widespread weed of habitation. Den.

LINACEAE

Linum L.

L. marginale A. Cunn. ex Planch.: "Wild Flax". Uncommon, occasional plants occurring in southern districts. Den.

ZYGOPHYLLACEAE

Nitraria L.

N. billardieri DC. (= *N. schoberi* auctt. austral. non L.): "Dillon Bush", "Nitrebush". Widespread and common, with a preference for heavier soil types. Attains maximum size in degenerate saltbush communities. The leaves are not readily grazed by stock, but the fruits are apparently more acceptable and eaten by sheep, native animals and birds. Den.

Tribulus L.

**T. terrestris* L.: "Cat-head", "Caltrops". Widespread weed, most common on light sandy-loams. Unpalatable, suspected of poisoning stock, bears troublesome spiny fruits. Den.

Zygophyllum L.

Z. ammophilum F. Muell.: Recorded from Wanganella, 1903. NSW.

Z. apiculatum F. Muell.: "Gall-weed". Restricted to sandy-loam soils in western districts where it is fairly common. Relatively unpalatable. Den.

Z. glaucum F. Muell. (= *Z. glaucescens* F. Muell.): "Pale Twin-leaf". Generally confined to western districts where it may be locally common on sandy soil. Palatable. Den.

Z. iodocarpum F. Muell.: "Violet Twin-leaf". Recorded from Hay district, possibly occurs elsewhere in northern districts. Palatable. NSW.

RUTACEAE

Geijera Schott

G. parviflora Lindl.: "Wilga". Widespread, though uncommon, occurring as occasional trees on areas of sandy-loam soils. Of variable palatability. Den.

EUPHORBIACEAE

Euphorbia L.

E. drummondii Boiss.: "Caustic Weed". Widespread and common on all soil types. Palatable, may at times be toxic to sheep. Den.

E. eremophila A. Cunn. ex Hook.: "Desert Spurge". Widespread on a range of soils with dense populations occurring after heavy summer rain on self-mulching clays. Moderately palatable, suspected of being poisonous to stock. Den.

**E. peplus* L.: "Petty Spurge". A weed restricted to areas of habitation. Den.

Phyllanthus L.

P. lacunarius F. Muell.: "Lagoon Spurge". Collected from clay soil near Conargo, distribution unknown. Den.

CALLITRICHACEAE

Callitriche L.

**C. stagnalis* Scop.: "Water Starwort". Widespread amphibious plant, common in swamps and areas subject to inundation. Den.

STACKHOUSIACEAE

Stackhousia Sm.

S. monogyna Labill.: "Creamy Stackhousia". Confined to sandy-loam soil in Narrandera area. Den.

SAPINDACEAE

Dodonaea L.

D. attenuata A. Cunn.: "Narrow-leaved Hop-bush". Widespread, with habitat restricted to light soils. Dense thickets may occur on sand ridges. Relatively unpalatable. Den.

D. cuneata Sm.: "Wedge-leaved Hop-bush". Occasional plants on loam soils near Tocumwal. Not known to occur elsewhere. Den.

Heterodendrum Desf.

H. oleifolium Desf.: "Rosewood", "Bullock-bush". Widespread and relatively common, restricted to soils of light texture, where it may occur in groves. Regenerates only from suckers. A useful forage tree which is relished by both sheep and cattle. Den.

MALVACEAE

Abutilon Mill.

A. halophilum F. Muell.: a "Chinese Lantern". Uncommon except in localized areas on saltbush plains. Moderately palatable. Den.

A. theophrasti Medik.: "Swamp Chinese Lantern". Uncommon, though possibly widespread; habitat apparently restricted to damp situations. Den.

Hibiscus L.

- **H. trionum* L.: "Bladder Ketmia". Generally uncommon except after heavy rains. Distribution restricted to southern and eastern districts. Den.

Lavatera L.

- L. plebeia* Sims: "Australian Hollyhock". Widespread, frequently found in depressions and areas subject to occasional inundation. Palatable. Suspected of poisoning stock. Den.

Malva L.

- **M. parviflora* L.: "Small-flowered Mallow". Widespread and common, particularly in areas of habitation. Relatively unpalatable, suspected of causing stock disorders. Den.

Modiola Moench

- **M. caroliniana* (L.) G. Don: "Red-flowered Mallow". A plant of habitation, occurring in gardens and irrigated areas, rarely in natural pastures. Den.

Sida L.

- S. corrugata* Lindl.: "Corrugated Sida". Widespread and common throughout, on a wide variety of soils. Very palatable. Den.

- S. fibulifera* Lindl.: "Pin Sida". Occasional occurrence on clay and loam soils. Palatable. Den.

- S. intricata* F. Muell.: "Tangled Sida". Generally confined to areas of sandy-loams or calcareous clays in northern and western districts. Moderately palatable. NSW.

- S. trichopoda* F. Muell.: "High Sida". Widespread and common, preferring clay and clay-loam soils. Palatable. Den.

HYPERICACEAE

Hypericum L.

- H. japonicum* Thunb.: "Matted St John's Wort". One collection from forest bordering Murray River between Mathoura and Tocumwal, where common. Distribution unknown but possibly occurs in similar situations elsewhere. Den.

- **H. perforatum* L.: "St John's Wort". Collected from roadside near Berrigan, where it occurred as a small isolated patch. A weed which has been shown to cause stock disorders. Den.

ELATINACEAE

Elatine L.

- **E. gratioloides* A. Cunn.: "Waterwort". One collection from swamp at "Ulonga", north west of Hay but undoubtedly occurring in similar situations elsewhere. Den.

FRANKENIACEAE

Frankenia L.

- F. comata* Sprague: Widespread throughout saltbush communities though rarely common. Den.

- F. latior* Sprague et Summerh.: Recorded from "Zara", Wanganella, 1917. NSW.

VIOLACEAE

Viola L.

- V. betonicifolia* Sm.: "Purple Violet". Recorded as scattered plants in Millewa State Forest, between Mathoura and Tocumwal. Den.

THYMELAEACEAE

Pinelea Banks et Sol. ex Gaertn.

- P. microcephala* R. Br.: "Small-headed Rice-flower". Widespread though uncommon, restricted to low woodland communities on sands and loams. Den.

LYTHRACEAE

Anniannia L.

- A. multiflora* Roxb.: "Jerry-jerry". Collected from Black Swamp near Wanganella and probably occurs in low-lying situations throughout. Den.

Lythrum L.

- L. hyssopifolia* L.: "Hyssop Loosestrife". Widespread and common in low-lying areas subject to occasional flooding. Unpalatable. Den.

- L. salicaria* L.: "Purple Loosestrife". One collection from 40 km south of Deniliquin. Not noted elsewhere, distribution unknown. Den.

MYRTACEAE

Callistemon R. Br.

- C. brachyandrus* Lindl.: "Prickly Bottle-brush". Only known occurrence on Eurolie Road, between Hay and Conargo, where locally common. Den.

Calytrix Labill.

- C. tetragona* Labill.: "Common Fringe-myrtle". Collected from sandhill in Millewa State Forest, where common. Den.

Eucalyptus L'Hérit.

- E. camaldulensis* Dchnh.: "River Red Gum". Widespread species generally confined to the proximity of streams and drainage lines. An important commercial timber. Den.

- E. dumosa* A. Cunn. ex Schau.: "Congoo Mallee". Restricted to outliers of Mallee vegetation on the western margins of the Plain. Den.

- E. largiflorens* F. Muell.: "Black Box". Widespread and common, usually in low-lying areas. Den.

- E. leucoxylon* F. Muell.: "Yellow Gum". Only known to occur in one small clump on outskirts of Barham. Den.

- E. melliodora* A. Cunn. ex Schau.: "Yellow Box". Common on loam soils in southern and eastern districts. Den.

- E. microcarpa* (Maiden) Maiden: "Inland Grey Box". Restricted to southern and eastern districts. Grows on a range of soil types but appears to be more plentiful on loams and clay-loams. Den.

E. porosa F. Muell. ex Miq.: "Black Mallee Box". Recorded from Moulamein district. NSW.

E. socialis F. Muell. ex Miq.: "Red Mallee". Several trees on loam soil on "Bundyulumbah" between Wanganella and Moulamein. Possibly similar isolated occurrences elsewhere on the Riverine Plain. Very common in mallee vegetation along northern and western perimeters of the Plain. Den.

Melaleuca L.

M. lauceolata Otto: "Black Tea-tree", "Moonah". Widespread and fairly common, its habitat restricted to light sandy soils. Den.

ONAGRACEAE

Epilobium L.

E. billardierianum Sér. ssp. *cinereum* (A. Rich.) Raven et Englehorn (= *E. cinereum* A. Rich.; *E. junceum* Sol.): "Hoary Willow-herb". Widespread but not common: restricted to moist, fertile situations. Den.

Ludwigia L.

L. peploides (Kunth) Raven ssp. *monteridensis* (Spreng.) Raven: "Water Primrose". A widespread aquatic plant found in shallow ponds, streams and channels. Suspected of causing gastro-enteritis in cattle. Den.

Oenothera L.

**O. affinis* Cambess: an "Evening Primrose". Collected from cemetery at Tocumwal and common on sandy soil in that vicinity. Den.

**O. stricta* Ledeb. ex Link: "Common Evening Primrose". Found mainly in southern and eastern districts where it is restricted to sand ridges. Unpalatable. Den.

HALORAGACEAE

Haloragis Forst. et f.

H. aspera Lindl.: Recorded from Hay and from Wakool district. NSW.

H. glauca Lindl.: "Grey Raspwort". Widespread and common on river banks and flats, less abundant in grasslands and saltbush country. Palatable. Den.

H. heterophylla Brongn.: a "Raspwort". Widespread though relatively uncommon. Palatable. Den.

Myriophyllum L.

M. elatinoides Gaudich.: "Coarse Water-milfoil". Widespread aquatic plant growing semi-submerged in static or slow flowing water. Den.

M. sp.: Collected from swamp edge in vicinity of Black Swamp, near Wanganella. Possibly common but overlooked elsewhere. The identity of this material needs further checking: the species is otherwise recorded only from northern Australia. Den.

M. propinquum A. Cunn.: "Water-milfoil". Widespread, semi-submerged aquatic plant. Den.

M. verrucosum Lindl.: "Red Water-milfoil". Common aquatic plant of slow moving streams and still water. Den.

APIACEAE (= UMBELLIFERAE)

Daucus L.

- D. glochidiatus* (Labill.) Fisch., Mey. et Avé-Lall.: "Australian Carrot". Found on clay and loam soils in most communities. Palatable. Den.

Eryngium L.

- E. plantagineum* F. Muell.: Collected from Deniliquin area. NSW.
E. rostratum Cav.: "Blue Devil". Uncommon except in localized areas in southern districts in years of favourable winter rainfall. Unpalatable. Den.

Hydrocotyle L.

- H. laxiflora* DC.: "Stinking Pennywort". Recorded from sandy soil in Millewa State Forest, further distribution unknown. Den.
H. sp. (possibly of the *H. hirta* group): Common in localized area on swampy clay in Millewa State Forest. Not noted elsewhere. Den.

PRIMULACEAE

Anagallis L.

- **A. arvensis* L.: "Scarlet Pimpernel". Widespread and locally common in good rainfall years. Both red- and blue-flowered forms occur. Palatable, suspected of poisoning stock. Den.

OLEACEAE

Jasminum L.

- J. lineare* R. Br.: "Desert Jasmine". Widespread though relatively uncommon twiner in protected woodlands on sandy soils. Palatable. Den.

GENTIANACEAE

Centaurium Hill

- C. spicatum* (L.) Druce: "Australian Centaury". Uncommon, though may occur in localized areas in southern districts during favourable years. Den.

MENYANTHACEAE

Nymphoides Séguier

- N. crenata* (F. Muell.) Kuntze: "Wavy Marshwort". Semi-submerged aquatic plant of streams and ponds, possibly restricted to the Murray River system in southern districts. Den.

CONVOLVULACEAE

Convolvulus L.

- **C. arvensis* L.: "Field Bindweed". A weed of habitation. Possibly toxic to stock. Den.
C. erubescens Sims: "Australian Bindweed". Widespread, relatively common on a range of types of soils, generally in grasslands and open timber country. Palatable. Den.

Cressa L.

C. cretica L.: "Resinweed". Common on saltbush plains and river flats on soils ranging from saline clays to sands. Palatable. Den.

Dichondra Forst. et f.

D. repens Forst. et f. sens. lat.: "Kidney-weed". Apparently confined to moist, shady situations in southern districts. Den.

Wilsonia R. Br.

W. rotundifolia Hook.: One collection from lake edge 40 km south-west of Deniliquin. Den.

BORAGINACEAE

Amsinckia Lehm.

**A. intermedia* Fisch. et Mey.: "Yellow Burr-weed". A weed of crop land and thin pasture swards. Den.

Buglossoides Moench

**B. arvensis* (L.) Johnston: "Corn Gromwell". A weed of cultivation, extending occasionally into damp situations in natural communities. Den.

Cynoglossum L.

C. australe R. Br.: "Australian Hound's Tongue". Recorded from Jerilderie, 1920. NSW.

C. suaveolens R. Br.: "Sweet Hound's Tongue". A weed of cultivation, not common. Den.

Echium L.

**E. plantagineum* L. (= *E. lycopsis* L.): "Paterson's Curse". Widespread though more common in southern and eastern districts where it is a prevalent weed on light soils. Palatable when young. Den.

Heliotropium L.

**H. europaeum* L.: "Heliotrope". Widespread and common weed, more prevalent on loams and clay-loams in the eastern districts. Prolific stands may occur after good summer rains. Unpalatable but may be eaten in the absence of other more preferred species. Sheep consuming large quantities of this plant over an extended period may suffer liver damage and ultimately die. Den.

**H. supinum* L.: a "Heliotrope". Widespread and fairly common, occurring mainly on clay soils. Den.

Lycopsis L.

**L. arvensis* L.: "Wild Bugloss". One collection from Barham. NSW.

Onphalolappula Brand

O. concava (F. Muell.) Brand: "Burr Stickseed". Recorded from "Zara", Wanganella, 1903. NSW.

Plagiobothrys Fisch. et Mey.

P. elachanthus (F. Muell.) Johnston: "Hairy Forget-me-not". Widespread though rarely common, occurring on most soil types. Palatable. Den.

P. pharisepalens (F. Muell.) Johnston: "White Rochelia". Widespread, may be locally common, found on a range of soil types. Palatable. Den.

VERBENACEAE

Phyla Lour.

**P. nodiflora* (L.) Greene: "Fog-fruit". Garden plant which has become naturalized in damp situations in several natural communities. Den.

Verbena L.

**V. bonariensis* L.: "Purple-top". Occasional weed of habitation and cultivation in southern districts. Den.

**V. officinalis* L.: "Common Verbena". Widespread, fairly common in depressions on most soil types. Moderately palatable. Den.

**V. supina* L.: One record, from Berrigan. NSW.

LAMIACEAE (= LABIATAE)

Ajuga L.

A. australis R. Br.: "Australian Bugle". Widespread though uncommon, occurring on light sandy soils. Den.

Marrubium L.

**M. vulgare* L.: "Horehound". Widespread weed, common on sandy-loams particularly in disturbed situations. Unpalatable, with seed capsules which cling to and contaminate wool. Den.

Mentha L.

M. australis R. Br.: "River Mint". Occurs on flooded areas near streams and water holes. Unpalatable. Den.

M. diemenica Spreng.: "Slender Mint". Distribution restricted to river flats and areas adjacent to streams. Unpalatable. Den.

**M. pulegiun* L.: "Pennyroyal". Several records from damp situations in southern areas. Den.

M. satnreioides R. Br.: "Native Pennyroyal". Widespread and common along streams. Den.

Salvia L.

**S. verbenaca* L.: "Wild Sage". Widespread weed of cultivated land and waste places, usually on sandy-loams. Unpalatable. Den.

Teucrium L.

T. racemosum R. Br.: "Grey Germander". Widespread and common species throughout, more prevalent on clay-loam and clay soils. Palatable. Den.

SOLANACEAE

Datura L.

- **D. ferox* L.: "Fierce Thornapple". Weed of roadsides, waste places and river flats, thriving in moist situations. Unpalatable. Den.
- D. inoxia* Mill.: "Downy Thornapple". Collected from sandy rise near Balranald at western extremity of Riverine Plain. Common in this area. NSW.
- **D. stramonium* L.: "Common Thornapple". Widespread weed of waste places. Unpalatable. Den.
- **D. wrightii* Regel: "Hoary Thornapple". Weed of disturbed areas and waste places, roadsides and river flats. Unpalatable, but when eaten may poison stock. Den.

Lycium L.

- **L. ferocissimum* Miers: "African Boxthorn". Widespread plant found in almost every community, prevalent on sandy soil along fencelines and in proximity to areas of habitation. Den.

Nicotiana L.

- **N. glauca* Grah.: "Tree Tobacco". Common only in western districts, where it is found in flooded country and depressions. Unpalatable. Den.

Physalis L.

- **P.* sp. (probably *angulata*): Collected from sand hill near Barham, where common. Den.
- **P.* sp.: Collected from railway yards, Deniliquin. Den.

Several collections of *Physalis* spp. have been made in the Deniliquin-Finley-Berrigan area but identification of specimens to species level has not been possible.

Solanum L.

- **S. elaeagnifolium* Cav.: "Silver-leaved Nightshade". Uncommon weed of cultivation in south eastern districts. Den.
- S. ellipticum* R. Br.: Recorded from Muggabah Creek, near Booligal. NSW.
- S. esuriale* Lindl.: "Quena". Widespread, common on loam soils, less common on clays and clay-loams. Relatively unpalatable. Den.
- **S. nigrum* L.: "Black-berry Nightshade". Widespread weed in moist situations and in areas of habitation. Unpalatable. Den.
- S. rostratum* Dun.: "Buffalo Burr". Collected from Hay, occasionally noted elsewhere in southern districts. NSW.
- S. simile* F. Muell.: "Oondoroo". Collected only from forest areas in southern districts. Den.
- **S. triflorum* Nutt.: "Three-flowered Nightshade". One collection only from channel bank near Mathoura. Den.

SCROPHULARIACEAE

Gratiola L.

- G. pedunculata* R. Br.: One collection only, from loam soil in Millewa State Forest. Den.

Kicksia Dumort.

- **K. sieberi* Dörfel.: "Hairy Toad-flax". One collection from Tuppal Creek area, south of Deniliquin. Common on loam soil in this locality. Den.

Limosella L.

- L. curdieana* F. Muell.: "Large Mudwort". Widespread, locally common in damp or wet situations. Den.

- L. australis* R. Br.: "Mudwort". Widespread and common plant of mud and shallow water. Den.

Minulus L.

- M. gracilis* R. Br.: "Slender Monkey-flower". Widespread, restricted to moist situations such as roadside drains and depressions. Den.

- M. prostratus* Benth.: "Small Monkey-flower". Localized occurrences on clay soil in saltbush community 64 km north of Balranald. Not recorded elsewhere. Den.

Morgania R. Br.

- M. floribunda* Benth.: "Blue Rod". Relatively common on loams and clay-loams in western districts, uncommon elsewhere. Unpalatable. Den.

Parentucellia Viv.

- **P. latifolia* (L.) Caruel: "Common Bartsia". Collected from clay soil 27 km east of Deniliquin, occasional occurrences elsewhere. Den.

Verbascum L.

- **V. thapsus* L.: "Great Mullein". One collection, from 24 km west of Narrandera. NSW.

- **V. virgatum* Stokes: "Twiggy Mullein". Weed of roadsides, river flats and waste places; more prevalent on sandy soils. Not common. Den.

Veronica L.

- **V. peregrina* L.: "Wandering Speedwell". Isolated occurrences on clay soil in Deniliquin area, also recorded from Hay and Barham districts. Den.

MARTYNIACEAE

Proboscidea Keller

- **P. louisianica* (Mill.) Thell.: "Purple-flowered Devil's Claw". A weed which is generally rare, but which may appear after summer rains. Unpalatable, with a large curved and barbed seed-capsule which may injure stock. Den.

MYOPORACEAE

Eremophila R. Br.

- E. divaricata* (F. Muell.) F. Muell.: "Spreading Emu Bush". Recorded from Thule Creek in Barham district. NSW.

- E. longifolia* (R. Br.) F. Muell.: "Emu Bush". Widespread species, common in woodland and shrub communities on light soils. Palatable. Den.

E. maculata (Ker-Gawl.) F. Muell.: "Fuchsia-bush". Generally common, restricted to the western fringes where it occurs on soils ranging from clays to loams. Relatively unpalatable, reputed to be poisonous to stock. Den.

Myoporum Sol. ex Forst. f.

M. debile (Andr.) R. Br.: Two collections only, from *Eucalyptus largiflorens* communities near Deniliquin. Den.

M. deserti A. Cunn. ex Benth.: "Dogwood". Widespread though rarely common, occurring as isolated plants on loam soils. Den.

M. montanum R. Br.: "Waterbush". Widespread shrub with occasional occurrence on sandhills and on sandy soils in vicinity of streams. Unpalatable. NSW.

M. platycarpum R. Br.: "Sugarwood". Widespread species occurring as occasional trees on sandy-loam soils. Den.

PLANTAGINACEAE

Plantago L.

**P. coronopus* L. ssp. *commutata* (Guss.) Pilger: "Buck's-horn Plantain". Widespread, though more prevalent in southern districts, common only in years of high winter rainfall. Apparently restricted to loams and clay-loams. Den.

P. cunninghamii Decne.: Widespread, habitat unresolved. Previously confused with *P. drummuoudii* and *P. turrifera*, all three species mistakenly referred to as *P. varia*. NSW.

P. drummuoudii Decne.: Widespread and common in all communities. Abundant in moist situations. Palatable when young. NSW.

**P. lanceolata* L.: "Ribwort", "Ribgrass". Weed occurring in and around areas of habitation. Not common. Den.

P. turrifera Briggs, Carolin et Pulley: Widespread and common in all communities. Abundant in small local depressions. Readily grazed when young. Den.

RUBIACEAE

Asperula L.

A. conferta Hook. f.: "Common Woodruff". Common in grasslands on clay and loam soils in the southern and eastern districts. Palatable. Den.

A. gemella Shaw et Turrill: "Twin-leaved Woodruff". One collection only from swamp area at "Ulonga", 48 km north-west of Hay. Common in this locality. Den.

Galium L.

**G. aparine* L.: "Cleavers". Habitat appears to be damp, low-lying areas. Distribution unknown. Den.

CUCURBITACEAE

Citrullus Schrad. ex Eckl. et Zeyh.

**C. lanatus* (Thunb.) Matsum. et Nakai: "Camel Melon". Widespread in disturbed areas, waste places and heavily grazed pastures. Generally restricted to light soils. Unpalatable. The fruits may be eaten in dry times and are suspected of being toxic to stock. Den.

Cucumis L.

- **C. myriocarpus* Naud.: "Paddy Melon". Widespread on sands and loam soils. Prevalent weed of fallowed land. Unpalatable. Den.

Ecballium A. Rich.

- **E. elaterium* (L.) A. Rich.: "Squirting Cucumber". Specimens collected from fallowed paddocks near Berrigan. NSW.

Zehneria Endl.

- Z. micrantha* (F. Muell.) F. Muell.: Widespread, although uncommon. Found in areas following periodic inundation on most soil types. Unpalatable. Den.

CAMPANULACEAE

Pratia Gaudich.

- P. concolor* (R. Br.) Druce: "Poison Pratia". Widespread and common in damp, poorly drained situations. Reputedly poisonous to stock. Den.
- P. darlingensis* Wimmer: Recorded only from channel bank 48 km south of Deniliquin. Common in this locality and possibly overlooked elsewhere because of its small size. Den.

Wahlenbergia Schrad.

- W. communis* Carolin: "Tufted Bluebell". Widespread, prevalent in grasslands on loam and clay-loam soils. Palatable. Den.
- W. fluminalis* (J.M. Black) Wimmer ex Hj. Eichler: "River Bluebell". Restricted to the vicinity of streams, found on clays or sands but grows best on the silty soils of river flats. Palatable. Den.
- W. stricta* Sweet: "Tall Bluebell". Widespread and common in open woodlands and in grasslands on loam and clay-loam soils. Palatable. Den.
- W. sp. aff. tadgellii* Lothian: "Annual Bluebell". Common in southern districts on loam soils. Palatable. Den.

GOODENIACEAE

Goodenia Sm.

- G. glauca* F. Muell.: "Pale Goodenia". Widespread and fairly common on clay and clay-loam soils in most communities. Palatable. Den.
- G. gracilis* R. Br.: "Slender Goodenia". Collected only from Millewa State Forest, south of Deniliquin. Den.
- G. heteromera* F. Muell.: "Spreading Goodenia". Widely distributed but uncommon. Found in depressions in woodlands and saltbush plains. Den.
- G. pinnatifida* Schlecht.: "Cut-leaved Goodenia". Fairly common on clay and clay-loams throughout. Palatable. Den.
- G. pusilliflora* F. Muell.: "Small-flowered Goodenia". Widespread and abundant on clay and clay-loam soils. Palatable. Den.
- G. subintegra* F. Muell. ex Tate: "Silky Goodenia". Common on clay and clay-loam soils in most communities. Very palatable. Den.

ASTERACEAE (= COMPOSITAE)

Acroptilon Cass.

- **A. repens* (L.) DC.: "Creeping Knapweed". Collected only from railway yards, Deniliquin. Den.

Actinobole Fenzl ex Endl.

- A. uliginosum* (A. Gray) Hj. Eichler: "Flannel Cudweed". Occurs mainly in western and northern districts, where it may be common on sandy-loam soils, particularly after good winter-spring rains. Palatable. Den.

Angianthus Wendl.

- A. brachypappus* F. Muell.: "Sprcading Cup-flower". Apparently restricted to sandy soils in northern districts, where it may be locally common in *Maireana pyramidata* communities. Den.
- A. strictus* (Steetz) Benth.: "Stiff Cup-flower". Widespread though never common, found on loam and clay-loam soils. Den.

Arctotheca Wendl.

- **A. calendula* (L.) Levyns (= *Cryptostemma calendula* (L.) Druce): "Cape-weed". Widespread weed, particularly common on light soils in southern districts. Fairly palatable and when eaten by dairy cows may taint the milk. Prolonged consumption of the plant may cause stock losses, due to the woolly seeds forming hair balls in the animal's stomach. Den.

Aster L.

- **A. subulatus* Michx.: "Aster Weed". Widespread and common on most soil types, particularly in damp, poorly drained situations. Unpalatable. Den.

Brachycome Cass.

- B. basaltica* F. Muell. var. *gracilis* Benth.: Widespread though uncommon, occurring in moist situations such as river flats and the borders of swamps. Den.
- B. campylocarpa* J.M. Black: Widespread and fairly common, particularly in northern and western districts, usually in moist situations such as local depressions. Palatable. Den.
- B. curvicaarpa* G.L. Davis: Locally common on clay and clay-loam soils in southern districts. Den.
- B. exilis* Sond.: "Slender Daisy". One collection only from *Maireana pyramidata* community on sand ridge 80 km north-east of Hay. Common in this habitat. Den.
- B. goniocarpa* Sond. et F. Muell.: One collection only, from grey clay soil flood plain, 27 km east of Deniliquin, in which locality it was common. Den.
- B. lineariloba* (DC.) Druce: Widespread and common on clay and loam soils in most communities. Palatable. Den.
- B. heterodonta* DC. (= *B. marginata* Benth.): Widespread and locally common in grasslands on clay and clay-loam soils. Den.
- B. papillosa* G.L. Davis: Several records from south-eastern districts and from near Mossgiel. NSW.

Calocephalus R. Br.

- C. citreus* Less.: Occasionally common in woodlands in south-eastern districts. Den.
- C. sonderi* F. Muell.: "Yellow Poverty-weed". A common species found on clay and clay-loam soils in most communities. In years of good winter-spring rainfall dense populations of this aromatic annual may occur, to the detriment of other more useful species. Usually ignored by stock but may be eaten in the young stage in the absence of more palatable plants. Den.

Calotis R. Br.

- C. cuneifolia* R. Br.: Common and widespread, apparently restricted to sandy-loam soils. Grazed at times but not regarded as a useful species. In common with most *Calotis* species, its spined fruits may be a nuisance in the fleeces of sheep. Den.
- C. erinacea* Steetz: "Tangled Burr-daisy". Widespread but not common. Confined to sandy soils. Relatively unpalatable, with spiny fruits. Den.
- C. hispidula* (F. Muell.) F. Muell.: "Hairy Burr-daisy". Also known as "Bogan Flea". Widespread and very common in all communities. Relatively unpalatable, with objectionable spiny burrs. Den.
- C. scabiosifolia* Sond. et F. Muell.: "Rough Burr-daisy". Widespread and locally common on clay and clay-loam soils. Relatively unpalatable, though eaten at times. Den.
- C. scapigera* Hook.: "Tufted Burr-daisy". Widespread though common only in localized areas along the banks of streams and swamps, occasionally in depressions on the saltbush plains. Relatively unpalatable. Den.

Carduus L.

- **C. pycnocephalus* L.: "Slender Thistle". Common on river flats and in well watered areas such as roadside drains and irrigated pastures. Rarely grazed. Den.
- **C. tenuiflorus* Curt.: "Slender Thistle". Recorded from Deniliquin and Hay districts. NSW.

Carthamus L.

- **C. laevis* L.: "Saffron Thistle". Widespread, very common in southern and eastern districts. More prevalent on self-mulching clay-loam soils but will grow on a wide range of soil types. Unpalatable, though young plants may be eaten in times of feed shortage. A weed with rigid spiny leaves. Den.

Cassinia R. Br.

- C. arcuata* R. Br.: "Chinese-shrub". Confined to the southern districts where it may occur as scattered plants in open woodlands and forests. Den.

Centaurea L.

- **C. calcitrapa* L.: "Star Thistle". May be locally common, particularly in southern and eastern districts. A useless spiny weed which may form dense tangled thickets. Den.
- **C. meliteusis* L.: "Maltese Cockspur". Widespread and common in practically all communities on a wide range of soils. Palatable, particularly in the young stage. Den.

Centipeda Lour.

- C. cumminghamii* (DC.) A. Br. et Aschers.: "Common Sneezeweed". Widespread throughout in depressions, gilgais and swamps. Generally regarded as unpalatable. Used by aboriginals to produce a "medical" brew said to cure all ills. Den.
- C. thespidioides* F. Muell.: "Desert Sneezeweed". Found in similar situations as *C. cumminghamii* but is always less common. Unpalatable, though eaten at times, particularly in western areas. Den.

Chondrilla L.

- **C. juncea* L.: "Skeleton-weed". An introduced weed which has rapidly invaded crop lands and, to a lesser degree, native pastures on loam and sandy soils in southern and eastern districts. Palatable, and in some areas regarded as a useful forage, however its aggressiveness and its tangled growth in crops outweigh any advantages it may have. Den.

Cichorium L.

- **C. intybus* L.: "Chicory". An occasional weed of roadsides and waste places in southern districts. Unpalatable. Den.

Cirsium Mill.

- **C. vulgare* (Savi) Ten.: "Spear Thistle". Widespread weed common in moist situations such as roadside drains and irrigated pastures. Grazed only in times of severe stress. Den.

Cotula L.

- **C. australis* (Sieb. ex Spreng.) Hook. f.: "Common Cotula". Apparently confined to well watered situations in areas of habitation and along roadsides in southern districts. Den.
- **C. bipinnata* Thunb.: "Cotula". Widespread, common in damp situations in most communities. Relatively unpalatable. Den.
- C. coronopifolia* L.: "Waterbuttons". Recorded from irrigation channel near Caldwell and from swamp near Wanganella. NSW.

Conyza Less.

- **C. bonariensis* (L.) Cronquist: "Flax-leaf Fleabane". Usually a weed of waste places and disturbed areas, occasionally occurring in natural pasture and on river flats. Unpalatable. Den.
- **C. floribunda* Kunth: "Tall Fleabane". Collected from river flat near Deniliquin but probably overlooked elsewhere because of its similarity to *C. bonariensis*. Den.

Craspedia Forst. f.

- C. chrysantha* (Schlecht.) Benth.: "Golden Billy-buttons". Widespread, common throughout, particularly on clay-loams in saltbush plains and open woodland communities. Moderately palatable when young. Den.
- C. globosa* (Benth.) Benth.: "Drumsticks". Generally confined to depressions on clay-loam soils in southern districts, where it may be locally common. Unpalatable. Den.

- C. pleiocephala* F. Muell.: "Soft Billy-buttons". Occurs mainly in western and northern districts, where it may be common in years of high winter-spring rainfall. Moderately palatable. Den.
- C. uniflora* Forst. f. sens. lat.: "Common Billy-buttons". Occasional occurrences in depressions in southern districts. Unpalatable. Den.
- C. sp.* Apparently unnamed species collected from near Mossgiel. Den.

Cymbonotus Cass.

- C. preissianus* Steetz: "Bear's Ear". Distribution apparently restricted to forests and woodlands bordering streams in southern districts. Not common. Den.

Eclipta L.

- E. platyglossa* F. Muell.: "Yellow Twin-heads". Confined to damp situations in southern districts where it may be common in localized areas. Apparently palatable but of little value because of its limited occurrence. Den.

Epaltes Cass.

- E. australis* Less.: "Spreading Nut-heads". One collection from Black Swamp near Wanganella. Den.
- E. cunninghamii* (Hook.) Benth.: "Tall Nut-heads". Recorded from swampy areas in the western Riverine Plain, also from "Zara", Wanganella. NSW.

Eriochlanys Sond. et F. Muell. ex Sond.

- E. belrii* Sond. et F. Muell. ex Sond.: "Woolly Mantle". Common in grasslands and open woodlands in the southern districts. Aromatic annual which is extremely unpalatable. Den.

Gnaphalium L.

- G. gymnocephalum* DC.: "Japanese Cudweed". Widespread, more common in southern and eastern districts in grasslands, open woodlands and saltbush plains. Moderately palatable but of little importance. Den.

It is probable that the similar *G. sphaericum* Willd. also occurs in similar habitats but has been overlooked.

- G. luteoalbum* L.: "Jersey Cudweed". Fairly common in areas of habitation and irrigation, rare in natural pastures in dry areas. Generally restricted to loam and sandy-loam soils. Palatable, but of little value. Den.
- **G. spicatum* Lamk.: "Cudweed". One collection, from river flat near Deniliquin. Den.

Hedypnois Mill.

- **H. rhagadioloides* (L.) Willd. ssp. *cretica* (L.) Hayek (= *Hedypnois cretica* (L.) Willd.): "Cretan-weed". Widespread, common only in grasslands, open woodlands and occasionally on saltbush plains. Habitat mainly restricted to clay-loams and clays. Very palatable, particularly when young. Den.

Helichrysum Mill.

- H. apiculatum* (Labill.) D. Don: "Yellow Buttons". Widespread, but much more common in grasslands and open woodlands in southern districts, occurring mainly on clay-loam and loam soils. Palatable. Den.

- H. bracteatum* (Vent.) Andr. sens. lat.: "Orange Paper-daisy". Widespread, though more frequent in northern districts, where it may be locally common. Usually occurs on sandy-loams but may be found on most soil types. Unpalatable. Den.
- H. rutidolepis* DC.: Collected from two sites along river bank near Deniliquin—possibly occurs in similar situations elsewhere. Den.
- H. senipapposum* (Labill.) DC.: Widespread, may be locally common on sands and sandy-loams. Unpalatable. Den.

Helipterum DC.

- H. anstrale* (A. Gray) Druce: "Urn Paper-daisy". Common in years of good winter-spring rains on loam and clay soils in southern and eastern districts. Palatable but of minor importance. Den.
- H. corymbiflorum* Schlecht.: "Small White Paper-daisy". Widespread and very common in most communities after good winter-spring rains. More prevalent on clays but may be found on most soil types. Rarely grazed. Den.
- H. floribundum* DC.: "Large White Paper-daisy". Widespread, though more common in northern and western districts where it may be the dominant annual after good winter-spring rains. Unpalatable, but dry standing material may be utilized when other forage is unavailable. Den.
- H. hyalospermum* F. Muell. ex Benth. (= *H. variable* Ostenf.): "Yellow Paper-daisy". Common in grasslands and open woodlands of southern districts, occurring on both clay and loam soils. Palatable, but rarely present in any quantity. Den.
- H. jessenii* F. Muell.: "Orange Sunray". Distribution apparently restricted to the drier northern districts, where it occurs on clay-loam and loam soils, though rarely common. Apparently unpalatable. Den.
- H. molle* (A. Cunn. ex DC.) Wilson: "Golden Paper-daisy". Widespread and common on a wide range of soils, usually more abundant on clays and clay-loams. Regarded as useful forage. Den.
- H. moschatum* (A. Cunn. ex DC.) Benth.: "Musk Sunray". Common in northern and western districts, occasional elsewhere, usually on loam and sandy-loam soils. Moderately palatable. Den.
- H. polygalifolium* DC.: Widespread though rarely common. Occurs on a wide range of soils, more prevalent on loams and sandy-loams. Moderately palatable. Den.
- H. pygmaeum* (DC.) Benth.: "Pigmy Paper-daisy". Widespread annual which may be very common on clay and clay-loam soils following good winter-spring rains. Palatable and a useful species when occurring in quantity. Den.

Hypochoeris L.

- **H. glabra* L.: "Smooth Catsear". Widespread and common on all soil types, attaining maximum size on sands and sandy-loams. May be a weed in irrigated pastures and lawns but is very palatable and forms a useful spring forage in natural pastures. Den.
- **H. radicata* L.: "Catsear". Probably less common than *H. glabra*. Both species have similar habitats and pastoral value. Den.

Inula L.

- **I. graveolens* (L.) Desf.: "Stinkwort". Widespread and common weed of roadsides, river flats, moist depressions, waste places and fallows. Unpalatable, but occasionally eaten in the absence of other forage. When eaten it taints meat and dairy products. Stock losses may occur due to the embedding of fine seed hairs in the bowel, allowing entry of bacteria which produce poisonous toxins. Den.

Isoetopsis Turcz.

- I. graminifolia* Turcz.: "Grass Cushions". Widespread and relatively common after good winter-spring rains. Occurs on most soil types. Palatable but rarely contributes significantly to the pasture as a whole. Den.

Ixiolaena Benth.

- I. leptolepis* (DC.) Benth.: "Stalked Ixiolacna". Widespread and common in most communities. Relatively unpalatable, but grazed at times. Den.

Lactuca L.

- **L. saligna* L.: "Wild Lettuce". Recorded from "Zara", Wanganella, 1913. NSW.
**L. serriola* L.: "Prickly Lettuce". Widespread weed found on most soil types in favoured situations such as river flats, fallows, old cultivation areas and gardens. Grazed to some extent when young. Den.

Leptorhynchos Less.

- L. panaetioides* (DC.) Benth.: "Woolly Buttons". Widespread and common, particularly on clay and clay-loam soils in grasslands and on the saltbush plains. Relatively unpalatable but grazed at times. Den.
L. squamatus (Labill.) Less.: Widespread but rarely common, usually on clay-loam soils. Den.

Microseris D. Don

- M. scapigera* (Sol. ex A. Cunn.) Sch.-Bip.: "Yam". May be locally common in leniently grazed grassland and saltbush pastures on both clay and loam soils in southern and central districts. Apparently very palatable. Den.

Millotia Cass.

- M. myosotidifolia* (Benth.) Stetz: Collected from only the one locality, 32 km west west of Narrandera, where this species was common on sandy-loam soil beneath *Callitris columellaris*. Den.

Minuria DC.

- M. cunninghamii* (DC.) Benth.: "Bush Minuria". Widespread, may be common in saltbush communities, usually growing in the protection of the shrubs. Heavily utilized where accessible. Den.
M. denticulata (DC.) Benth.: "Woolly Minuria". Widespread, rarely abundant except in roadside drains and in depressions on the saltbush plains. Moderately palatable. Den.
M. integerrima (DC.) Benth.: "Smooth Minuria". Occurrence and palatability similar to that of *M. denticulata*. Den.
M. leptophylla DC.: "Minnie Daisy". Widespread, may be locally common on light soils in grassland communities. Moderately palatable. Den.

Myriocephalus Benth.

- M. rhizocephalus* (DC.) Benth.: "Woolly-heads". Widespread, common in years of high winter-spring rainfall, usually occurring in shallow local depressions on loam and clay-loam soil. Grazed, but unimportant because of its small size. Den.

Olearia Moench

- O. pineleoides* (DC.) Benth.: "Pimelea Daisy-bush". Recorded from "Zara", Wanganella, 1903. NSW.

Onopordum L.

- **O. acaulon* L.: "Stemless Thistle". Prevalent along roadsides and in natural pastures in western districts, also occurs in irrigated pastures. A useless weed. Den.

Picris L.

- **P. echioides* L.: "Ox-tongue". Weed of roadsides and pastures in southern districts, where it may be locally common. A bristly plant which is rarely grazed. Den.
- **P. hieracioides* L.: "Hawkweed". Occasional occurrence in sandy situations, such as river flats, in southern districts; elsewhere rare. Den.

Podolepis Labill.

- P. canescens* A. Cunn. ex DC.: "Grey Podolepis". Recorded from Wanganella, 1903. NSW.
- P. muelleri* (Sond.) G.L. Davis: "Podolepis". Widespread and common throughout Bladder Saltbush communities, particularly in years of high winter-spring rainfall. More prevalent on clay-loam soils. Relatively unpalatable. Den.

Podospermum DC.

- **P. resedifolium* (L.) DC. (= *P. calcitrapifolium* DC.; *Scorzonera calcitrapifolia* Vahl): Locally common in good years on grasslands in southern districts. Usually found on clay soils. Palatable. Den.

Scolymus L.

- **S. hispanicus* L.: "Golden Thistle". Localized infestation of grassland 30 km south of Deniliquin only known occurrence. Den.

Schkuhria Roth.

- **S. pinnata* (Lam.) Kuntze ex Cabrera: "Dwarf Marigold". Collected from roadside near Conargo, occasional occurrences elsewhere in southern districts. Den.

Senecio L.

- S. cunninghamii* DC.: "Branching Groundsel". Widespread, locally common on flats and depressions along creeks and rivers. Relatively unpalatable, though browsed at times. Den.
- S. glossanthus* (Sond.) Belcher: "Slender Groundsel". Widespread and relatively common on the saltbush plains, less common in open woodlands and grasslands. Found on soils ranging from clays to loams. Palatable and suspected of being poisonous to stock but rarely occurs in sufficient quantity alone to cause trouble. Den.

- S. platylepis* DC.: "Toothed Groundsel". Widespread though never common, usually occurring as isolated plants in roadside drains. Den.
- S. quadridentatus* Labill.: "Cotton Fireweed". Widespread and relatively common in River Red Gum forests and open woodlands, rare in grasslands and saltbush communities. More prevalent on sandy or silty soils. Rarely grazed. Den.
- S. runcinifolius* J.H. Willis: "Tall Groundsel". Widespread, rarely common except in shrub communities where it is protected by low dense shrubs such as *Nitraria billardieri*. Palatable, suspected of poisoning stock, but unlikely to do so because it rarely occurs in sufficient quantity. Den.

Silybum Adans.

- **S. marianum* (L.) Gaertn.: "Variegated Thistle". Widespread in moist situations such as roadside drains, river flats and irrigation areas, usually as localized dense patches, rarely extending over large areas. Moderately palatable when young, considered to be poisonous at times. Den.

Sonchus L.

- **S. asper* (L.) Hill: "Rough Sowthistle". Widespread, though rarely abundant, in fallows and gardens and moist situations in grassland, open woodland and saltbush communities. Grazed when young. Den.
- **S. oleraceus* L.: "Common Sowthistle". Widespread and relatively common in most communities on all soil types after good winter-spring rains. Always heavily grazed. Den.

Stuartina Sond.

- S. muelleri* Sond.: "Spoon Cudweed". Widespread on light soils, rarely conspicuous except in years of good winter-spring rainfall. Den.

Taraxacum Wiggers

- **T. officinale* Weber ex Wiggers: "Dandelion". Occurrence restricted to gardens and areas of habitation, extending occasionally to moist situations such as river flats. Den.

Toxanthes Turcz.

- T. perpusillus* Turcz.: Collected from loam soil during wet winter-spring. Apparently occurs over wide range in good seasons but is overlooked because of its size. Den.

Vittadinia A. Rich.

- V. triloba* (Gaudich.) DC. sens. lat.: "Fuzzweed". Widespread and relatively common though rarely abundant. Usually occurs on lighter types of soils. Moderately palatable. Den.

Xanthium L.

- **X. occidentale* Bertol.: "Noogoora Burr". Widespread, locally common in moist situations such as river and creek flats and to a lesser degree, roadside drains. This species has increased markedly in the Riverine Plain in recent years. Unpalatable, poisonous when young, with spiny burrs which contaminate wool. Den.
- **X. spinosum* L.: "Bathurst Burr". Widespread and common on all soil types, particularly after summer rains. Suspected of being poisonous to stock but because of its long spines it is rarely eaten. The burrs are a serious contaminant of wool. Den.

ADDENDUM

(added in proof)

POACEAE

Astrebla F. Muell.

- A. lappacea* (Lindl.) Domin: "Curly Mitchell Grass". Occurs on clay soil plains of the northern Riverine Plain, particularly around Conoble, where it may cover extensive areas after favourable summer rains. Good forage when green but little nutritive value is retained after drying. Den.

CYPERACEAE

Eleocharis R. Br.

- E. spachelata* R. Br.: "Tall Spike Rush". A common species on intermittently flooded country along the Murrumbidgee River in western regions. Regarded as useful feed for cattle. Den.

CHENOPODIACEAE

Chenopodium L.

- C. auricomum* Lindl.: "Golden Goosefoot". Restricted to the northern Riverine Plain where isolated plants occur in low-lying areas on clay soil. A useful forage species, particularly during drought periods. Den.

CAESALPINIACEAE

Cassia L.

- C. circinnata* Benth.: One collection from near Coleambally. Den.
- C. barclayana* Sweet var. *barclayana*: Collected from roadside 6 km north-east of Hay. Occasional plants noted in similar situations in southern and eastern districts. Den.

APIACEAE

Foeniculum (Tourn.) L.

- F. vulgare* Mill.: "Fennel". Widely distributed weed of roadsides and waste places. Den.

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Wattle, Broad-leaved,	260	<i>Zehneria</i>	274
, Prickly	260	Zygophyllaceae	263
, Western Black	259	<i>Zygophyllum</i>	263
, Western Silver	259		